THE

AMERICAN GAS-LIGHT JOURNAL

Devoted to LIGHT, WATER, and SEWERAGE.

JOHN B. MURRAY, BANKER, No. 40 WALL STREET, NEW YORK, SOLE PROPRIETOR.

"LET THERE BE LIGHT!"

FIRST YEAR.—No. 6. NEW YORK, THURSDAY, DECEMBER 1, 1859. $3 PER ANNUM.

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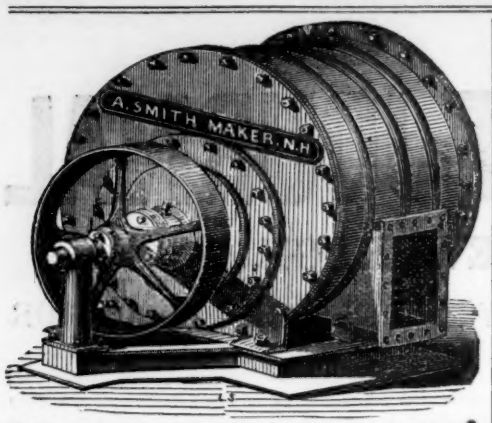

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CLEVELAND, May 17th, 1859.

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Sp. gr.	1.288	
Hygremetric moisture,		1.85
Volatile combustible moisture,		34.15
Coke, (clear and porous,)		64.00
		100
Fixed carbon in the coke,	62.00	
Ashes, (yellowish white,)	2.00	
	64.00	

COMPOSITION OF ASHES.

Silex,	0.80
Alumini,	0.45
Sulphate of Iron,	0.85
	2.00
Percentage of sulphur,	0.28

J. L. CASSELS, M.D.,
Prof. of Chemistry, Cleveland Medical College.

P. S.—The specimen from which the above analysis was made, was taken by myself from a car load, and may be regarded as a fair average; in fact, this coal is very uniform in its characteristics. It also yielded four per cent. more gas than the Pittsburgh coal.

J. L. C.

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New York	"	"	"
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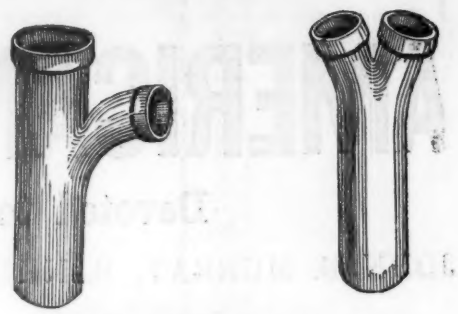

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WASTE OF CROTON WATER.

CROTON AQUEDUCT DEPARTMENT, Nov. 12, 1859.

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All continuous streams of water for any purpose whatever, all self-acting, standing, or sitting fixtures discharging quantities of water enormously disproportioned to the amount required for any legitimate purpose, and all other sources of waste, can be prevented by proper care, and are, therefore, required so to be, under the penalties provided by the city ordinances.

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By order of the Board.

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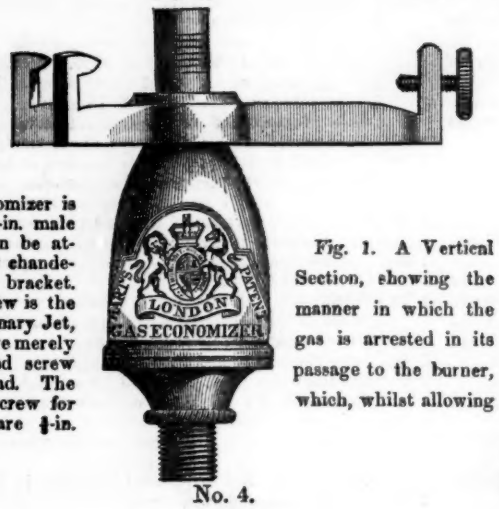

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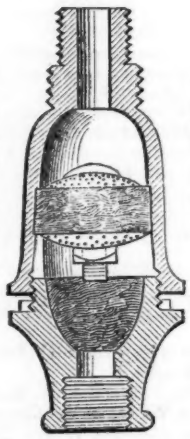

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				$						
1	1857	ADRIAN	Mich.	50,000	50		May & Nov.	4,000	275	3 50
2	1856	AKRON	O.	20,000	33½		Do.	3,500	120	3 00
3	1845	ALBANY	N.Y.	250,000	20	4	Jan. & July	65,000	3,200	3 00
4	1858	ALBION	N.Y.	30,000	100		Do.	3,000	186	3 80
5	1851	ALEXANDRIA	Va.	106,53-	—	—	City works.	9,000	790	3 50
6	1852	ALLEGHANY	Pa.	200,000	25	4	May & Nov.	25,000	900	3 00
7	1853	ALLENTOWN	Pa.	60,000	100	3½	Do.	5,000	300	3 50
8	1857	ALTON	Ill.	75,000	—	—	Private works.	4,000	250	3 50
9	1858	ANNAPOLIS	Md.	100,000	25		Jan. & July	4,000	120	4 00
10	1858	ANN ARBOR	Mich.	23,000	50	5	Mar. & Sept.	5,500	180	4 00
11	1858	ASTORIA	N.Y.	20,000			Do.	6,000	96	4 00
12	1855	ATLANTA	Geo.	50,000	25	5	Jan. & July	12,000	200	5 00
13	1855	ATTLEBORO'	Mass.	50,000	100	3	June & Dec.	6,000	151	4 00
14		ATOONA *	Pa.	10,000						
15	1850	AUBURN	N.Y.	80,000	50	5	Jan. & July	12,000	400	7 00
16		AUGUSTA	Geo.	75,000			Do.			6 00
17	1858	AUGUSTA	Me.	150,000	50		Do.	10,000	287	4 00
18	1817	BALTIMORE	Md.	550,000	100	5	June & Dec.	100,000	8,300	2 50
19	1852	BANGOR	Me.	120,000	100	4	Jan. & July	12,000	760	3 50
20		BATAVIA	N.Y.	32,000	20	4	Do.	2,500	150	4 00
21	1853	BATH	Me.	65,000	100	3	April & Oct.	10,000	270	3 75
22		BATH *	N.Y.	25,000			Do.			
23	1858	BELFAST	Me.	14,000	100		Jan. & July	7,000	145	7 00
24	1856	BELLEFONT	Pa.	20,000	25	2	Do.	3,500	105	4 00
25	1854	BETHLEHEM	Pa.	23,000	50	3½	June & Dec.	2,000	207	3 80
26	1859	BEVERLY	Mass.	40,000	100			4,000	150	4 00
27	1853	BINGHAMPTON	N.Y.	50,000	50		May & Nov.	10,000	230	4 00
28		BIRMINGHAM *	Pa.	40,000	50		Do.			
29	1853	BORDENTOWN	N.J.	50,000	25	3	June & Dec.	4,000	114	3 80
30	1822	BOSTON	Mass.	1,000,000	500	5	Do.	200,000	10,410	2 50
31	1851	BRIDGEPORT	Ct.	75,000	25	4	Jan. & July	10,000	500	4 00
32	1857	BRIDGETON	N.J.	50,000	20		Do.	5,000	178	4 00
33	1856	BRISTOL	Pa.	20,000	25		Do.	2,000		
34	1855	BRISTOL	R.I.	35,000	50	2	Do.	6,000	120	4 00
35		BROOKLINE	Mass.	40,000	100	3	Do.	3,500	200	3 50
36	1825	BROOKLYN	N.Y.	2,000,000	25	5	Jan. & July	150,000	10,000	3 00
37	1848	BUFFALO	N.Y.	600,000	50	5	Do.	70,000	3,300	3 00
38		BURLINGTON *	N.J.	25,000	25		Do.	5,000		4 00
39	1853	BURLINGTON	Vt.	75,000	25		Do.	10,000	220	4 50
40	1852	CAMBRIDGE	Mass.	200,000	100	4	Feb. & Aug.	20,000	1,294	3 50
41	1852	CAMDEN	N.J.	300,000	100	3	April & Oct.	10,000	700	3 50
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68	1858	CONCORD	N.H.	50,000	50	4	Do.	12,000	400	3 50
69	1853	COVINGTON & NEWPORT	Ky.	100,000	50	3½	Do.	28,000	544	4 00
70	1854	CUMBERLAND	Md.	60,000	50	3	Do.	6,000	230	4 00
71	1857	DANBURY	Ct.	50,000	25	4	Do.	2,000	120	4 00
72	1856	DANVILLE	Pa.	3,000			Do.			
73	1855	DAVENPORT	Iowa.	56,000	100	—	Do.	6,000	350	
74	1848	DAYTON	O.	50,000	25	5	Aug.	10,000	620	4 00
75	1853	DEDHAM	Mass.	40,000	50		Jan. & July	6,000	112	4 00
76	1849	DETROIT	Mich.	500,000	50	5	Do.	30,000	1,000	3 50
77	1854	DORCHESTER	Mass.	150,000	100		Do.	12,000	210	4 00
78	1859	DOVER	Del.	25,000			Do.	2,000		
79		DOYLESTOWN *	Pa.	50,000			Do.			
80		DUBUQUE	Iowa.	100,000	50	—	Do.	17,000	500	4 50
81	1853	EAST BOSTON	Mass.	133,000	25	4	Do.	20,000	475	3 50
82	1853	EAST GREENWICH	R.I.	11,200	100	15	Do.	3,000	100	7 00
83	1850	EASTON	Pa.	125,000	50	4	June & Dec.	6,000	657	3 60
84	1856	EASTPORT	Me.	50,000	55		Do.	3,000	140	4 00
85	1855	ELIZABETH	N.J.	100,000	20	3½	Jan. & July	8,000	280	3 80
86	1852	ELMIRA	N.Y.	50,000	25	3½	Do.	10,000		4 00
87	1852	ERIE	Pa.	68,000	50	3½	June & Dec.	10,000	300	3 00
88	1843	EVANSVILLE	Ind.	60,000	50	4	Jan. & July		306	
89	1847	FALL RIVER	Mass.	26,000	—	—	Private works.	12,000	400	3 50
90	1859	FAYETTEVILLE	N.C.	25,000	100	6	Jan. & July	7,000		6 00
91	1857	FISHKILL	N.Y.	10,000	20		Do.	1,500	50	6 00
92	1853	FITCHBURG	Mass.	100,000	50	3	Do.	7,000	190	4 00
93		FLEMINGTON *	N.J.	20,000			Do.			
94	1855	FLUSHING	N.Y.	41,000	50	1¼	Mar. & Sept.	6,500	134	4 00
95	1851	FRANKFORT	Ky.	30,000	—	—	City Works	5,500	140	4 50
96	1851	FREDERICK CITY	Md.	36,000	100	—	Jan. & July	5,000	250	6 70
97	1854	FREDERICKSBURG	Va.	72,500	50	5	Do.	4,500	230	4 00
98	1858	FREDONIA	N.Y.	10,000	100	—	Do.	2,000	43	4 00
99	1858	FULTON	N.Y.	12,000	100		Do.	2,500	120	7 00
100	1855	GALENA	Ill.	80,000	50		Do.	8,000	236	4 00
101	1858	GALVESTON	Texas.	120,000	50		Do.	7,000	150	6 00
102	1853	GENEVA	N.Y.	75,000	25	3½	Do.	6,000	250	4 00
103	1854	GLENN'S FALLS	N.Y.	35,000	50	3	Feb. & Aug.	4,000	161	4 00
104	1854	GLOUCESTER	Mass.	40,000	50		Jan. & July			3 50
105		GLOVERSVILLE *	N.Y.	30,000			Do.			
106	1855	GREAT BARRINGTON	Mass.	5,000	100		Apr. & Oct.	4,000	58	7 00
107	1859	GREENSBORO'	N.C.	12,000	50		Do.			7 00
108	1859	GREENSBURG *	Pa.	30,000	25		Do.	3,000		
109	1854	HAGERSTOWN	Md.	25,000	10		Jan. & July	2,000	125	4 50
110		HALLOWELL *	Me.	40,000			Do.			
111		HANNIBAL *	Mo.	20,000			Do.			
112	1857	HARLEM (N.Y. City)	N.Y.	350,000	50	3½	Do.	25,000	700	3 50
113	1855	HARRISBURG	Pa.	100,000			Do.			
114	1849	HARTFORD	Ct.	175,000	25	4	Do.	25,000	1,700	3 50
115		HAVERSTRAW	N.Y.	15,000			Do.		100	
116	1856	HOLLIDAYSBURG	Pa.	30,000	25	3	Do.	4,000	200	3 50
117	1854	HONESDALE	Pa.	30,000	25	3	Do.	5,500	180	4 00
118	1853	HUDSON	N.Y.	50,000	100	3½	Feb. & Aug.		270	4 00
119	1857	HUNTINGDON	Pa.	18,000	50	3	Do.	2,000	107	3 50
120	1856	HUNTSVILLE	Ala.	7,825	25		June & Dec.	2,000		5 00
121		INDIANOPOLIS *	Ind.	150,000			Do.			
122	1857	IOWA CITY	Iowa.	40,000	50		Feb. & Aug.	4,000		4 50
123	1852	ITHICA	N.Y.	75,000	25	3½	Jan. & July	6,000	212	4 00
124	1857	JACKSON	Mich.	25,000	50		Do.	6,000	125	3 50
125	1858	JACKSONVILLE	Ill.	25,000	50		Do.	7,000	150	
126	1856	JAMAICA	N.Y.	20,000	25	4	Do.	6,000	180	4 00
127		JAMAICA PLAINS *	Mass.	50,000			Do.			
128	1856	JANESVILLE	Wis.	50,000	100		Do.	12,000	200	4 00
129	1853	JERSEY CY. & HOBOKEN	N.J.	300,000	20	5	Do.	30,000	1,900	3 00
130		JERSEY SHORE *	Pa.	15,000			Do.			
131	1856	JOHNSTOWN	Pa.	30,000	25	3	Do.	8,000	300	3 00
132	1859	JOLIET	Ill.	39,000	100		June & Dec.	10,000	150	4 00
133	1853	KALAMAZOO	Mich.	30,000	100		Do.	10,000	200	4 00
134	1848	KENSINGTON	Pa.	100,000	10	5	Feb. & Aug.	60,000	2,800	2 50
135	1855	KEOKUK	Iowa.	100,000	100		Jan. & July	10,000	360	3 50
136	1855	KINGSTON	Pa.	50,000	50		Do.	3,000	240	4 00
137	1854	KNOXVILLE	Tenn.	63,000	50		April & Oct.	4,000	128	5 00
138	1859	LA CROSSE	Wis.	100,000	50		June & Dec.	10,000	100	5 00
139	1854	LAFAYETTE	Ind.	60,000	50	3	Jan. & July	8,000	250	3 25
140	1856	LAMBERTVILLE	N.J.	30,000	20		Do.	2,500	90	4 00
141	1849	LANCASTER	Pa.	100,000	25	4	Do.	10,000	620	3 00
142	1856	LANCASTER	O.	25,000	50		Do.	5,000	140	3 50
143		LANSINGBURG	N.Y.	25,000	—	—	Private works.	7,000		4 00
144	1849	LAWRENCE	Mass.	200,000	100	4	Feb. & Aug.	15,000	779	3 50
145	1859	LEAVENWORTH *	Kans.	200,000	100		Jan. & July			
146	1856	LEBANON	Pa.	26,000	25		Feb. & Aug.	5,000	225	4 00
147	1858	LEWISBURG	Pa.	20,000	50		Jan. & July	4,000	100	4 00
148	1856	LEWISTON	Me.	100,000	100	3	Do.	10,000	300	4 00
149	1856	LEWISTOWN	Pa.	30,000	20	3	April & Oct.	3,000	160	3 10
150	1853	LEXINGTON	Ky.	100,000	50	4	Jan. & July	5,000	306	4 00
151	1853	LITTLE FALLS	N.Y.	12,000	25		Do.	3,500	115	7 00
152	1858	LOCKHAVEN	Pa.	28,000	25		Do.	3,000	140	4 00
153	1838	LOUISVILLE	Ky.	600,000	50	6	Do.	80,000	2,866	2 70
154	1849	LOWELL	Mass.	200,000	100	5	Do.	50,000	2,290	3 25
155	1852	LYNCHBURG	Va.	70,000	25	5	Do.	6,000	330	3 80
156	1852	LYNN	Mass.	55,000	100	4	Do.	20,000	400	4 00
157	1859	LYONS *	N.Y.	20,000	50		Do.	8,000		
158	1852	MACON	Geo.	75,000	25	6	Do.	5,000	254	5 00
159	1851	MADISON	Ind.	160,000	25	3	Do.	10,000	303	3 50
160	1855	MADISON	Wis.	100,000	25		Do.	5,000	220	6 00
161	1854	MALDEN & MELROSE	Mass.	50,000	100	3	Feb. & Aug.	5,000	180	4 00
162	1852	MANAYUNK *	Pa.	40,000	25		Do.	7,000		
163	1859	MANCHESTER	N.H.	125,000	100	5	Jan. & July	25,000	800	3 00
164	1830	MANHATTAN (N.Y.Cy.)	N.Y.	4,000,000	50	5	Do.	600,000	26,000	2 50
165		MANSFIELD *	O.	25,000	30		Do.			
166		MARBLEHEAD *	Mass.	50,000			Do.			
167		MAUCH CHUNK *	Pa.	50,000	25		Do.			
168	1857	MARIETTA	O.	30,000	50		Do.	6,000	125	4 00
169	1857	MASSILON	O.	20,000	25		Do.	5,000	120	3 00
170	1855	MEADVILLE	Pa.	30,000	25		Do.	3,000	150	3 50
171		MEDINA	N.Y.	2,000	20		Do.	2,000	30	7 00
172		MEMPHIS *	Tenn.	150,000	50		Do.			
173	1858	MIDDLETOWN	Ct.	50,000	25	3	Mar. & Sept.	5,000	250	4 00
174		MILFORD *	Mass.	20,000			Do.			
175	1852	MILWAUKIE	Wis.	400,000	50	5	Jan. & July	24,000	1,300	3 50
176	1836	MOBILE	Ala.	200,000	50		Do.	30,000	850	4 50
177		MONROE *	Mich.	50,000			Do.			
178	1852	MONTGOMERY	Ala.	100,000	100	4	Feb. & Aug.	7,000	300	6 00
179	1859	MORRISANIA *	N.Y.	30,000	25		Feb. & Aug.			
180	1859	MORRISTOWN *	N.J.	40,000	50		Do.			
181	1854	MOUNT HOLLY	N.J.	16,650	50	3	April & Oct.	2,000	140	7 00
182		MOUNT VERNON *	O.	50,000	25		Do.			
183	1857	MUSCATINE	Iowa.	50,000	100	—	Jan. & July	3,000	150	4 50
184	1854	NANTUCKET	Mass.	50,000	100	3	Feb. & Aug.	6,000	275	4 00
185		NASHUA	N.H.	45,000	60		Jan. & July.	10,000	250	3 50
186	1850	NASHVILLE	Tenn.	200,000	50	5	Do.	20,000	780	4 00
187	1858	NATCHEZ	Miss.	46,000	100		Do.	8,000	200	5 00
188	1852	NEW ALBANY	Ind.	200,000	50	3½	Do.	16,000	250	3 50
189	1846	NEWARK	N.J.	300,000	50	4½	Do.	45,000	2,400	3 50
190	1856	NEWARK	O.	30,000	100		Do.	7,000	135	3 50
191	1852	NEW BEDFORD	Mass.	130,000	100	5	Do.	15,000	1,125	3 25
192		NEW BRITAIN *	Ct.	50,000	50		Do.			
193	1851	NEW BRUNSWICK	N.J.	100,000	20	4	Do.	8,000	460	3 80
194	1852	NEWBURG	N.Y.	67,000	20	3½	Do.	15,000	600	4 00
195	1852	NEWBURYPORT	Mass.	150,000	100		Do.	9,000	315	3 75
196	1857	NEWCASTLE	Del.	22,300	10	3	Do.	4,000	112	4 00
197	1847	NEW HAVEN	Ct.	200,000	25	4	Do.	30,000	2,004	4 00
198	1853	NEW LONDON	Ct.	70,000	50	3	Do.	12,000	300	4 00
199	1885	NEW ORLEANS	La.	1,500,000	100	6	Do.	120,000	5,000	4 50
200	1853	NEWPORT	R.I.	130,200	100	4	Do.	10,000	500	3 50
201	1854	NEWTON & WATERTOWN	Mass.	300,000	100	2	Do.	10,000	270	3 80
202		NEWTON *	Pa.	20,000						
203	1823	NEW YORK	N.Y.	1,000,000	50	5	May & Nov.	100,000	13,000	2 50
204	1859	NIAGARA FALLS *	N.Y.	100,000	25		Do.			
205		NORFOLK *	Va.	60,000						
206	1853	NORRISTOWN	Pa.	41,700	25	3	June & Dec.		350	3 75
207		NORTHERN LIBERTIES	Pa.	400,000	25	7½	Mar. & Sept.			2 50
208	1856	NORTHAMPTON	Mass.	35,000	25		Do.	4,500	140	4 00
209		NORTHBRIDGEWATER *	Mass.	50,000			Do.			
210	1856	NORWALK	Ct.	30,000	25	4	Feb. & Aug.	6,000	265	4 00
211	1859	NORWALK	O.	30,000	50		Jan. & July	4,000	100	4 00
212	1854	NORWICH	Ct.	75,000	25	3½	Do.	12,000	500	3 50
213	1859	NYACK	N.Y.	20,000	50		Do.	2,500		
214	1855	OGDENSBURG	N.Y.	75,000	50		Do.	9,000	250	4 00
215		ORANGE *	N.J.	65,000			Do.			
216	1852	OSWEGO	N.Y.	81,250	25	3½	Do.	15,000		3 80
217	1855	OTTAWA	Ill.	45,000	100	6½	Do.	6,000	225	4 00
218	1856	OWEGO	N.Y.	40,000	50	3½	Do.	5,000	200	4 00
219	1845	PAINSVILLE	O.	200,000	100	5	May & Nov.			
220	1856	PALMYRA	N.Y.	12,000	50		Jan. & July.	3,000	120	3 50
221		PATERSON	N.J.	110,000	5	3	Do.	18,000	600	3 80
222	1850	PAWTUCKET	R.I.	100,000	50	4	Do.	8,000	485	3 50
223	1853	PEEKSKILL	N.Y.	31,000	50	3	June & Dec.	4,000	190	4 00
224	1859	PEOPLE'S, CHICAGO	Ill.	500,000	50		Do.	50,000		
225	1855	PEORIA	Ill.	100,000	50	4	Do.	8,000	350	3 50
226	1852	PETERSBURG	Va.	120,000	25	5	Jan. & July	20,000	600	3 80
227	1841	PHILADELPHIA	Pa.	3,000,000	—	—	City Works.	650,000	32,000	2 25
228	1855	PIQUA	O.	50,000	50		Jan. & July	6,500	200	4 00
229	1835	PITTSBURG	Pa.	300,000	50	5	Do.	60,000	2,624	1 50
230	1854	PITTSFIELD	Mass.	40,000	100		Do.	8,000	210	4 00
231		PLATTSBURG *	N.Y.	30,000			Do.			
232	1853	PLYMOUTH	Mass.	40,000	100		April & Oct.	8,000	181	4 00
233	1849	PORTLAND	Me.	250,000	50	4	Jan. & July	30,000	1,900	3 50
234	1859	PORTLAND *	Oreg.	50,000	50		Do.			
235		PORT LAVACCA *	Texas.	50,000			Do.			
236	1851	PORTSMOUTH	N.H.	60,000	100	3	April & Oct.	12,000	425	4 00
237	1855	PORTSMOUTH	O.	50,000	50	4	Jan. & July	10,000	400	3 50
238	1855	PORTSMOUTH	Va.	100,000	50	4	Do.	4,000	140	4 00
239	1856	POTTSTOWN	Pa.	20,000	25		Do.	8,500		
240	1850	POTTSVILLE	Pa.	110,000	50	2	Do.	10,000	525	3 30
241	1850	POUGHKEEPSIE	N.Y.	70,000	25	4	Mar. & Sept.	15,000	625	4 00
242	1848	PROVIDENCE	R.I.	1,000,000	50	4	Jan. & July	60,000	4,200	3 00
243	1858	QUINCY	Ill.	300,000	50	4	June & Dec.	18,000	409	3 50
244	1855	RACINE	Wis.	40,350	25		Do.	7,000	200	3 50
245	1857	RAHWAY	N.J.	50,000	20		Jan. & July	5,000	165	4 00
246	1858	RALEIGH	N.C.	25,000	100	6	May & Nov.	5,000	120	6 00
247	1848	READING	Pa.	80,000	25	3	Jan. & July	20,000	700	3 00
248	1852	RICHMOND	Va.	841,975	—	—	City Works.	30,000	2,200	3 80
249	1848	ROCHESTER	N.Y.	200,000	50	5	Jan. & July	50,000	2,100	3 00
250	1854	ROCKLAND	Me.	50,000	100		Do.	6,000	170	4 40
251	1852	ROME	N.Y.	35,000	100	3½	Do.	10,000		4 00
252	1854	RONDOUT & KINGSTON	N.Y.	65,000	20	3½	June & Dec.	10,000	375	3 80
253	1854	ROXBURY	Mass.	150,000	100	5	Jan. & July	20,000	1,100	3 50
254		RUTLAND *	Vt.	100,000			Do.			
255		SACO	Me.	71,600	100	3½	April & Oct.		220	4 00
256		SACRAMENTO	Cal.	500,000	100		Do.			
257		SAGG HARBOR *	N.Y.	20,000			Do.			
258		SAINT ALBANS *	Vt.	50,000	50		Do.			
259	1858	SAINT JOSEPH	Mo.	45,000	100	5	Jan. & July	6,000	250	5 00
260	1839	SAINT LOUIS	Mo.	600,000	50		June & Dec.	180,000	5,000	3 50
261	1857	SAINT PAUL	Min.	200,000	50	3	Jan. & July	10,000	159	6 00
262	1856	SALEM	N.J.	30,000	20	3	Do.	5,000	260	3 80

JOHN B. MURRAY'S

TABLES of AMERICAN GAS-LIGHT COMPANIES, Corrected November 30, 1859.

No.	Chartered.	Town.	State.	Capital.	Per Sh.	Sem An'l Div.	Dividends payable.	Population of Gas District.	Private Meters.	Price 1,000 feet.
					$					
263	1850	Salem & So. Danvers	Mass.	200,000	100	4	Feb. & Aug.	30,000	1,300	3 50
264	1859	Salem	O.	25,000	20		Do.	3,000	171	3 50
265	1859	Salisbury	N.C.	14,000	50	6	May & Nov.	3,500	80	6 00
266		Salmon Falls*	Me.	25,000						
267		San Antonio*	Texas	75,000						
268	1854	Sandusky	O.	75,000	50		April & Oct.	9,000	300	3 00
269	1852	San Francisco	Cal.	1,000,000	100	6	Do.			
270	1853	Saratoga Springs	N.Y.	39,000	100		Jan. & July	6,000	267	3 60
271	1849	Savannah	Ga.	200,000	25	5	Do.	10,000	1,100	4 75
272	1851	Schenectady	N.Y.	50,000	—	—	Private Works	11,000	400	4 00
273	1858	Scranton	Pa.	100,000	25		Jan. & July	6,000	120	3 80
274	1857	Selma	Ala.	20,000	100		Do.	2,000	40	5 00
275	1856	Seneca Falls	N.Y.	80,000	50	2	Do.	6,000	220	4 00
276		Shreveport*	La.	40,000	25		Do.			
277	1856	Sing Sing*	N.Y.	40,000	20		Do.	3,000	141	4 00
278	1849	Somersworth*	N.H.	100,000	100	3	Do.	3,000	280	4 00
279	1859	Southbridge	Mass.	5,000	25		Do.	4,000	100	6 00
280		South Boston*	Mass.	200,000	50		Jan. & July		400	3 25
281	1854	Springfield	Ill.	75,000	50		Do.	10,000	493	3 50
282	1848	Springfield	Mass.	100,000	500	5	Feb. & Aug.	10,000	700	4 00
283	1855	Stamford	Ct.	22,000	25	5	April & Oct.	7,000	140	4 00
284	1857	Staten Island	N.Y.	150,000	50	5	Jan. & July	26,000	260	4 00
286	1859	Staunton	Va.	18,000	50	6	Do.	4,000	81	7 00
287	1848	Syracuse	N.Y.	125,000	25	5	Mar. & Sept.	25,000	1,200	3 80
288		Tamaqua*	Pa.	40,000	25		Do.			
289	1859	Tarrytown & Irvt'n.	N.Y.	70,000	50		Jan. & July	3,000	200	4 00
290	1858	Taunton	Mass.	60,000	50	3	Do.	12,000	245	4 00
291		Terre Haute*	Ind.	40,000			Jan. & July			
292		Thompsonville*	Ct.	25,000						
293		Tiffin	O.	25,000			Do.			
294	1853	Toledo	O.	100,000	50	3	Do.	8,000	450	3 50
295	1847	Trenton	N.J.	100,000	20	4	Do.	15,000	700	3 60
296	1848	Troy	N.Y.	200,000	100	4	June & Dec.	35,000	1,575	3 60
297	1849	Utica	N.Y.	80,000	100	4	April & Oct.	22,000	612	3 60
298		Vicksburg	Miss.	66,000	50		Mar. & Sept.	4,000	220	4 50
299	1859	Vincennes	Ind.	25 000	100		Do.			
300		Wakesburn*	Pa.	60,000			Do.	6,000	230	4 00
301	1856	Walden	N.Y.	2,500	50		Do.		17	6 00
302		Waltham*	Mass.	2 ,000			Do.			
303		Ware*	Mass.	30 000			Do.			
304	1854	Warren	R.I.	50,000	50	—	Do.	3,000	115	3 50
305	1855	Washington	D.C.	500,000	20	5	Jan. & July	50,000	2,600	3 50
306	1848	Washington	Pa.	30,000	25	—	Do.	4,000	190	3 00
307	1854	Waterbury	Ct.	100,000	25		Do.	6,000	225	4 00
308	1852	Waterford	N.Y.	12,000	100		Do.	4,000	80	
309	1852	Watertown	N.Y.	20,000	100		Do.	10,000	260	7 00
310		Watertown*	Wis.	25,000			Do.	5,000		
811		Wautoma	Wis.	30,000	100		Do.	3,000		
312		Waverly*	Miss.	20,000			Do.	4,000		
313		West Cambridge*	Mass.	100,000						
314	1852	Westchester	Pa.	100,000	25	2½	Feb. & Aug.	3,500	543	3 50
315	1853	West Troy	N.Y.	100,000	50	3	Jan. & July	8,000	425	4 00
316	1850	Wheeling	Va.	75,000	25	6	Do.	13,000	700	2 70
317	1856	Wilkesbarre	Pa.	50,000	50		Do.	4,000	450	3 80
318	1850	Williamsburg	N.Y.	337,500	50		Do.	60,000	1,700	3 50
319	1857	Williamsport	Pa.	70,000	25	4	Do.	3,000	257	3 80
320	1853	Wilmington	N.C.	60,000	50	5	Do.	8,000	286	5 00
321	1852	Wilmington	Del.	200,000	50	5	Feb. & Aug.	20,000	1,300	3 50
322	1854	Winchester	Va.	36,000	50	2½	Mar.	5,000	195	4 00
323	1856	Woodstock	Vt.	10,000	50	4	Jan. & July	4,000	79	6 00
324	1853	Woonsocket	R.I.	82,600	100	5	Do.	4,000	200	3 50
325		Wooston*	O.	30,000			Do.	6,000		
326	1849	Worcester	Mass.	120,000	100	5	Do.	15,000	980	3 50
327	1854	Yonkers	N.Y.	70,000	50		Do.	6,000	290	3 80
328	1849	York	Pa.	40,000	50	3	June & Dec.	10,000	320	7 00
329	1858	Ypsilanti	Mich.	20,000	50		Feb. & Aug.	6,000	140	4 00
330	1848	Zanesville	O.	55,000	25	4	Do.	10,000	320	3 50

GAS-LIGHT COS. IN THE BRITISH PROVINCES.

1		Brockville*	C.W.	50,000				5,000		
2		Cobourg*	C.W.	40,000				4,500		
3		Dundas*	C.W.	30,000				6,000		
4	1843	Halifax	N.S.	160,000	40	6	May	30,000	1,274	3 00
5	1848	Kingston	C.W.	80,000	100	5	Mar. & Aug.	12,000	400	3 50
6	1853	London	C.W.	100,000	20	5	May & Nov.	5,000	350	5 00
7	1847	Montreal	C.W.	300,000	40	4	Mar. & Sept.	80,000	2,030	3 25
8	1854	Ottawa	C.W.	40,000	20		Do.	5,000	300	4 50
9		Point Levi*	C.E.	75,000						
10	1847	Quebec	U.E.	200,000	200	4	Mar. & Aug.	60,000	1,217	3 00
11		Port Hope	C.W.	7,000				4,500		
12	1848	Saint Catherine's*	C.W.	20,000				7,000		
13		Saint John	N.B.	160,000	80	4	June & Dec.	20,000	1,400	3 50
14		Saint John*	N.F.	50,000				30,000		
15	1848	Toronto	C.W.	400,000	100	4	Feb. & Aug.	50,000	1,919	3 33½

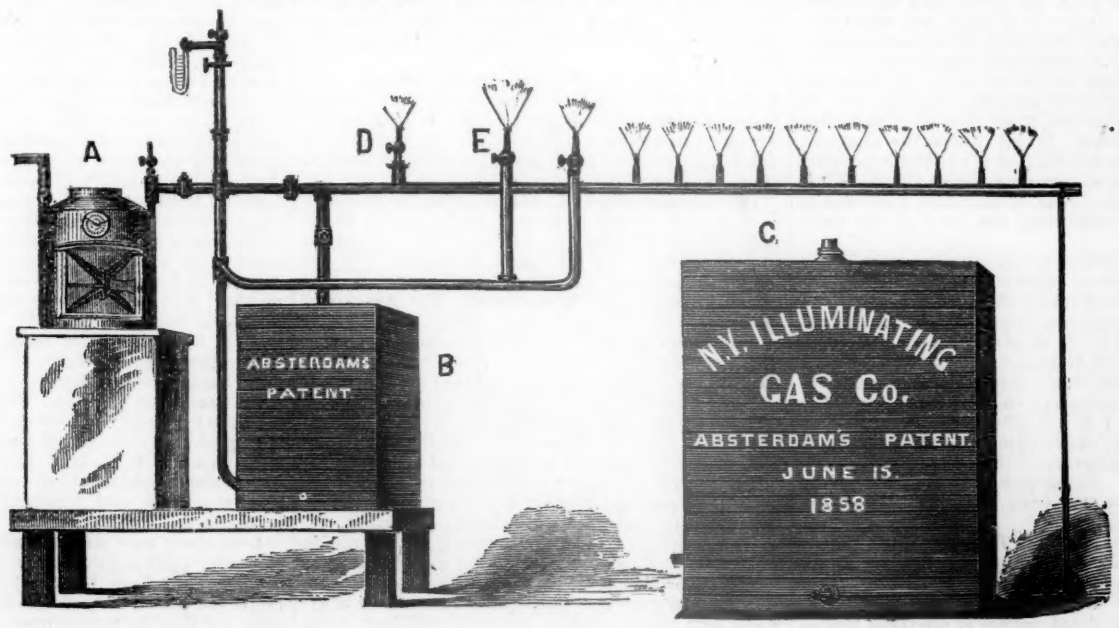
CUBAN, MEXICAN, & SOUTH AMERICAN GAS-LIGHT COS.

1	1844	Compania Espanola	Hav.	1,250,000	500	7½	Jan. & July	750,000	5,537	5 00
2	1857	Compania Cubana	Hav.	500,000	500	10	Do.			5 00
3		Cardenas*		50,000				180,000	90	5 00
4		Cienfugos*		50,000				25,000		5 00
5		Guanabacoa*		50,000				40,000		2 00
6		Guyaquil*	S.A.	150,000						
7		Lima*	S.A.	100,000						
8		Matanzas*		50,000						
9		Mexico City*	Mex.	550,000						
10		Montevideo*	S.A.	500,000						
11		Regla*		50,000						
12		Rio Janeiro*	S.A.	500,000						
13		Saint Jago de Cuba*		500,000	500			40,000	2,000	5 00
14		Trinidad de Cuba*		50,000						
15		Valparaiso*	S.A.	500,000						
16		Vera Cruz*	Mex.	500,000						
17		Ville Clara*		50,000						

* Estimated.

NEW YORK ILLUMINATING GAS COMPANY,

No. 335 Broadway.—Office No. 4 Moffat's Building.



THIS Company is the proprietor of Absterdam's Patent for Carbonizing Illuminating Gas for the State of New York, and organized for the purpose of its introduction and use throughout this State. This invention secures an increased and superior brilliancy of light, with the economy of from one-third to one-half in the consumption of gas; and, in order to insure this large amount of saving, this company will supply the gas apparatus, materials, and fittings, at their own expense, and take their pay from the savings of gas made by said process. This invention has been thoroughly tested for the last ten months, to the entire satisfaction of their customers, and they are now taking orders from the consumers of gas for its use. In order to understand that we actually save the consumption stated, we present the above plate, which is a prospective elevation of the apparatus now on exhibition at our office.

A represents the gas-meter supplied with a water pressure gauge. *B* represents our smallest sized apparatus, connected with the meter, and supplied with thirteen gas-burners, all lighted. *C* represents our largest sized apparatus that we now have in use. *D* represents a three-foot fish-tail burner consuming gas from the city gas works after being carbonized. *E* represents a six-foot burner consuming same kind of gas without being carbonized.

In this way, we show from a three-foot burner of carbonized gas a more brilliant light than can be produced from a six-foot burner of city gas not carbonized.

The inventor of the above process for carbonizing gas respectfully solicits of merchants and capitalists from the Western, Middle and Southern States, an examination of the same. Having already sold the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York, the balance of the States, and the cities and towns in the State of New York, are now for sale, at a reasonable price. A fortune can be made from it in every State in the Union. All negotiations will be attended to, by calling on, or addressing

JOHN ABSTERDAM, Scientific and Mechanical Engineer,

No. 335 BROADWAY, NEW YORK, ROOM No. 6.

ON THE DISCHARGE OF ATMOSPHERIC ELECTRICITY THROUGH GAS MAINS.

By B. Silliman, Jr.,

Professor of General and Applied Chemistry in Yale College, *New Haven, Ct.*

Read before the American Association for the Advancement of Science, at Springfield, Mass., in August, 1859, and revised by the Author for the American Gas-Light Journal:

During the past year two cases have fallen under my observation of the discharge of atmospheric electricity through the iron gas mains of New Haven, with effects which, so far as I know, have not been previously noticed.

First case.—On the last Sunday of June, 1858, about 4 P.M., a violent thunderbolt fell on the spire of the Wooster Place Baptist Church, in New Haven, and was conveyed, without injury to the spire, (227feet high,) to a point less than twenty feet from the earth. At this point, owing—as was afterwards ascertained—to an imperfect ground termination of the conductor, the electric tension was sufficient to produce a lateral disruptive discharge through a brick wall, twenty inches in thickness, to meet a gas pipe on the side of the wall, directly opposite to the lightning conductor. By the new channel thus forcibly gained, the electric discharge was conducted to the main pipes of distribution in the street and no further immediate effects were seen. Within a few days after the explosion, however, the rapid escape of gas on the street, in front of the church, was noticed, as well by the odor as by the sickly condition (and subsequent death) of the shade trees lining the street. Upon opening the ground, it was found to be saturated with gas, and every joint in the whole length of the street (some forty in number in a 6-inch pipe) was discovered to be leaking profusely.

The inference seemed unavoidable that the leakage was occasioned by the electric discharge.

Second case.—During the last week in July, 1859, another very energetic discharge of atmospheric electricity fell upon a house in George street, New Haven. This house was supplied with gas, and while but little injury was done to the dwelling, and none at all to its inhabitants, the gas mains in the whole street, to the number of over *sixty joints*, were found to be entirely loosened. They all required to be repacked.

In both these cases, the loosened joints were confined to the line of pipe in the street on which the bulidings stood, and the injury appeared to be arrested by the abutting pipes of the next cross-streets.

Again—In July of this year, the same church spire struck in 1858 was again the subject of a second accident of this sort. The wall of brick was again perforated, near the same place, and in the same manner as last year, with the additional circumstance that the gas pipe in the church was fused or burned through at the point of contact of the escaping discharge, and the gas being thus set on fire, in its turn set fire to the wainscoting, or furring, behind which the pipe ran. But owing either to the violence of the discharge being less than last year, or because a portion of the electric tension found another road of discharge, there was no effect produced in disturbing the joints of the street mains.

The mechanical effects herein described may be due to a sudden and almost explosive expansion of the gas in the mains, at the point of electrical discharge; and in spite of the enormous extent of the metallic circuit—over twenty miles of pipes of from 3 to 12 in. diameter—all buried in moist earth, the restoration of electrical equilibrium could not be accomplished without this hitherto unobserved effect of expansion on the gas in the mains. I do not offer this as an explanation of the phenomenon, which appears to me incapable of satisfactory explanation upon the accepted notions of electrical tension. The subject is brought before the Section in the hope that some of the eminent Electricians present may discuss it.

Following the reading of Prof. Silliman's paper, Prof. Henry rose to say that he had listened to the statements of facts of so much novelty and importance with the greatest interest. He agreed with Prof. Silliman that the accepted notions of electrical tension and induction seemed entirely to fail of meeting the present case. He considered it requisite that a series of experiments should be undertaken with the view of determining the conditions of this interesting problem. Possibly the difference in electric conducting power between the iron pipes and the lead joints might be a modifying circumstance.

Prof. Henry remarked, farther, that the introduction of gas-pipes into our houses brought a new source of danger to human life from electrical discharges. The rod should not merely terminate in the earth, but he had been in the habit of recommending that it be placed in connection with the water or gas-pipes. He did not think the safety of houses in any degree prejudiced by the introduction of gas-pipes into them. The gas companies might object to the connection of the conducting-rod with the gas-pipes, but inasmuch as the plexus of water and gas-pipes below the city must eventually receive the shock, it made little difference to them whether the rod connected or not; but if lightning struck a house where the rod did not connect with the pipes below ground, the pipes in the house were sure to be made the medium of its connection with the pipes below.

Prof. Lovering asked if it would more relieve the house from danger by making the connection with the gas-pipes higher than below the surface.

Prof. Henry was not sure. Arago's suggestion was a wise one—that with certain lords of creation we had better not be too familiar.

For the American Gas-Light Journal.

THEORY *VERSUS* PRACTICE.

Having noticed in your last issue a note from Prof. Wm. E. A. Aikin, in which he attempts to trace a relationship between his own unfortunate deductions and the experiments of Dr. Torrey, I have thought it pertinent to allude to some of his previous statements, inasmuch as the practical abandonment of his theory is accompanied by a wholesale repudiation of the means at present employed in gas-making, as well as a broad insinuation against the honesty of those engaged in the business, attributing all increase in the bills of a consumer to some mismanagement, or neglect on the part of the gas companies to that consumer's injury.

These, like his first statements, are made without a shadow of fact to sustain them.

Prof. Aikin repeated the experiment "in the same manner detailed in a paper originally read before the American Association for the Advancement of Science," &c. Of course the same objections apply to the repetition, that were urged by Dr. Torrey in his remarks on Prof. Aikin's original paper, *i. e.*, the jars were placed on the shelf of a pneumatic trough, and a large proportion of water exposed to the air. Without attempting to disprove Dr. Torrey's statements, and without the magnanimity to admit that his own experiments were defective, he makes a new issue; that if the gas is not injured by remaining in contact with water in the gas-holder, *it is deteriorated in other ways*, some of which he proceeds to notice.

He conceives that there is a great loss of illuminating constituents in the washing of the gas. This I greatly doubt; although there is a small loss occasioned by this process, the loss, whatever it may be, falls on the manufacturer, for it is the purified article that is tested by the photometer. But what does Prof. Aikin mean when he says, that "if the gas at any time is not as nearly as possible inodorous, a general outcry is immediately raised and continued until the nuisance is abated?" Did the Professor ever see such coal-gas? If it were possible to remove all offensive odor from illuminating gas, it would not be expedient to do so, for it is the offensive smell that betrays its escape, and thus serious accidents are prevented. If the sulphuretted hydrogen be removed by the lime purifiers, there is no unpleasant odor emitted by coal-gas when properly burned.

He also states, that "coal-gas cannot be kept, even in close vessels, (he evidently means out of contact with water,) for any great length of time, without serious injury." "A familiar evidence of this," he says,—is the feeble light emitted by a gas jet, when first kindled, after long disuse.

That the diminution of light is owing to the introduction of air into the orifice of the jet, and by endosmose through the stop cock, or minute fissures, and not to a change in the gas itself, is evident from the light soon becoming brilliant, long before the stagnant gas in the small pipes is exhausted. The diffusion of atmospheric air through the gas, extends to a greater or less degree backward, in proportion to the length of time since the jets were used. The Professor thinks the entrance of air by endosmose, being necessarily attended by exosmose of coal-gas, the latter ought to be detected by its odor. The escape, however, is necessarily so slow that the characteristic smell will be unnoticed unless the stop-cock be approached very closely.

The learned Prof. says: "If we had asked the question a few years ago, whether it is possible to have air mingled with coal-gas, as supplied to the public, the answer might have been unhesitatingly, No. With the apparatus formerly employed in the manufacture, the accidental admission of air was hardly possible, since the gas being generated under pressure, and ever afterwards kept under pressure, any accidental leak, while it allowed the gas to pass out, would not be likely to permit much air to pass in. But the refinement of modern science, has suggested the addition of an exhausting arrangement, so connected with the retorts in the gas-works, that the pressure under which the gas is generated, may be reduced to the minimum, in order to diminish correspondingly the danger of loss from leakage." The exhausting apparatus now in use, certainly does diminish the pressure of the retort, thereby benefitting the consumer as well as the manufacturer of gas.

Long contact with an intensely heated surface under great pressure, will, of itself, deteriorate illuminating gas, inasmuch as some of the illuminating constituents are decomposed, causing a deposit of carbon on the inner surface of the retort.

If the pressure on the hydraulic main is reduced to an even gauge, there still remains a pressure on the retort of about three inches, that being the force required to displace the tar at the end of the dip-pipe. Without an exhauster this pressure is sometimes twenty-five inches.

Between the exhauster and the hydraulic main, the pressure is kept at an even guage, rendered so by the use of a governor, which compensates for any change of pressure that may occur from the quickened stroke of the engine, or a reduction in the quantity of the gas made.

The pressure between the outlet of exhauster and the consumer's burner, is the same, other things being equal, that existed in the palmy days the Prof. alludes to.

If the introduction of atmospheric air was deemed advisable to increase the profits of gas-light corporations, it would not have been postponed until the application of an exhauster was instituted. What gas company would wilfully deteriorate the gas they have manufactured? Do they not aim to make its photometric value so apparent as to throw into disuse all other means of artificial illumination?

The learned Prof. objects to the introduction of clay retorts, not that experience has proved them objectional, but that theoretically their adoption can only reflect to the consumer's disadvantage.

He states that the introduction of clay retorts is becoming general. If so, the quality of the gas generally made should be shown inferior to that produced from the same coals when carbonized with iron retorts.

The uniform temperature preserved in clay retorts, necessarily causes an economical carbonization of the coals employed, *producing a better, and more reliable quality of gas.*

They are cheaper, more durable, and their adoption involves a great saving of labor and fuel, all of which advantages must eventually reflect to the benefit of the consumer of gas, as does every other improvement that tends to cheapen the cost of manufacture.

In conclusion, I will only add, that the Professor's description of the process of gas-making, show his entire want of practical knowledge of the subject, and if he is a candidate for the office he seeks to provide, he should obtain such information as to prevent a repudiation of the present process, unless he can suggest one that may be more reliable.

T. W. P.

VALUE OF COAL-TAR.

For the American Gas-Light Journal.

Export Offices, 34 Castle Street,
Liverpool, 28th Oct., 1859.

In the last number of the American Gas-Light Journal there is an inquiry as to the best mode of dealing with tar produced in the manufacture of coal-gas.

We beg to suggest that *tar* may be used to heat retorts, if used judiciously, in a profitable manner. The fire-place should be of the ordinary construction, so as to consume coke and tar—or each separately;—for tar only the fire-bars should be closer, and the draft less, which latter must be done, not by the damper, but by covering the ash-pit. A cistern will be required, fixed at as high an elevation as possible (so as to get pressure or force for the tar) from which a pipe must run into the inside of the oven, to which a perforated pipe must be attached, with a trough underneath it to catch the waste tar, in order to keep same off brick work. The perforations to be about as large as will admit of a stocking needle—a stop-cock to be fixed outside, so as to regulate the flow of tar. The cistern must be so fixed that it will not render the tar liable to be frozen, nor be placed too near the retorts, or other place, where it may take fire (for if it takes fire it will burn most furiously), but so placed that the tar will be so heated or tempered that it will flow freely through the perforations. In the first instance make a coke fire, and then turn on it the tar, regulating the supply as required. Either raw tar, as it flows from the hydraulic mains, or distilled tar can be used.

If pitch is to be manufactured, then an excellent steam fuel may be made of it mixed with small coke or breeze compressed into blocks—here it is worth 50 per cent. more than coal for steam purposes. The latter process is under patent here.

Lampblack may also be made out of pitch and tar, at a very light expense by preparing a furnace like one for retort beds, but as open as possible, and the longer the better. The fire to be lighted first with hot coke, and then the tar run upon it, being admitted by a stop-cock, so as to be consumed as it flows. The smoke from the tar travels along the flue alluded to, and deposits itself like soot on top and sides. The fires are then let out, the flue allowed to cool, and a man scrapes the lampblack from it, which hangs sometimes a foot in thickness.

The *carbon* extracted from used retorts, broken into pieces about the size of macadam, may all be used as fuel—with the coke for heating retorts, it gives out a very dense heat, and should be used carefully in small quantities at a time. We are, Gent'n,

Yours most truly,
Emanuel Turner & Co.

Walton's Anti-Freezer.—The cold weather is now upon us, and before the end of the month the gas-pipes may need a preventive against frost. Mr. Walton's apparatus is the desideratum.

ON THE DETERIORATION OF COAL-GAS.

For the American Gas-Light Journal.

University of Maryland,
Nov. 7, 1859.

I have but this moment received your Journal of the current month, and find there what you call the severe strictures of R. G. C. As I never notice anonymous attacks, this would have passed without remark, had I not learned from your editorial that the initials belong to a Mr. Courtenay, who, I presume is the president of the gas company in Louisville, Ky. As president of a gas company, the view he takes is what was to have been expected; my only surprise being that some one has not given utterance to similar views before. The head and front of my offence, seems to have been that I have endeavored to satisfy the great body of gas consumers, whose interests are unfortunately diametrically opposed to those of the gas makers, that the consumers of gas are not only entitled to protection, but that it is necessary for them. The public should not rest satisfied with the opinion of any one connected with or interested in the manufacture as to the quality of the article made. As well might we let the miller establish the grade of the flour he sends to market, by inspecting it himself. As well might we leave it to the distiller to mark the percentage of alcohol in his whiskey, with his own hydrometer. While it is objected that I dwell on truisms, it should not be forgotten that many of the truisms of the gas makers are entire novelties to gas consumers, and as it is for the benefit of the larger class I write, it will probably happen again that I shall have to deal with analogous truisms. Without any reference whatever to the manner in which it was done, I still feel under obligations to Mr. Courtenay for calling my attention to one important typographical error, occurring probably in the first printing of my first article, and perpetuated in the successive reprints to the present moment,—an error relating to a subject I conceived so unimportant, that until now it has escaped my notice. And although it would stand self-corrected by the context, to any scientific man, it might mislead an uninformed reader, and is, therefore, to be regretted. The passage Mr. C. quotes, and which seems to be the basis of his strictures, should read as follows: "I obtained a result "varying from 0.370 to 0.380 *somewhat below that* "*given as characterizing good gas.*" And then follows what was not quoted: "But in reality I attach very "little importance to this result since the mere specific "gravity of such a complex mixture as coal-gas can "hardly be relied upon to determine its commercial "value." That the pressure under which the gas was burned in my experiments was vastly above what ought to be allowed for ordinary purposes, or for determining absolute photometrical values I am not to learn now for the first time. But for purposes of comparison so long as the gas from the main was burned under exactly the same physical conditions as were immediately afterwards observed in relation to the successive quantities of deteriorated gas, the conditions were of necessity exactly equal. And since nothing could have affected one that did not equally affect all, the comparison must have been as exactly accurate as if the pressure had been represented by any other quantity. The question of photometer is precisely in the same category—while all my inquiries as to the absolute illuminating value of coal-gas have been made with a Bunsen instrument the comparative value of the succesive flames as described in my experiments, were more conveniently made with a Rumford photometer. Nor can I conceive any posible source of error that could have affected the result in reference to one flame that would not equally, to the same extent, and in the same manner have effected all. Had I used a Rumford for one flame, and a Bunsen for another, there might have been just cause for complaint. But unless my arrangements were so defective, or my powers of observation so obfuscated that I confounded the light of ten candles with the light of three, I must have accomplished what I undertook. And that was simply and solely to satify those who read my article that coal gas must be seriously injured, if in the manufacture it should be carelessly or accidentally permitted, a too intimate, or too long continued contact with water. This truism of the gas maker is not so familiar to all consumers, neither do they yet fully comprehend the extent of the liability to such injury. In your editorial you remark, "We have no desire to become partisans nor to involve "ourselves in a controversial discussion, and yet we "cannot but view Dr. Aikin's letter as embodying a "virtual surrender of his position. It is true, that he "reconciles many of the discrepancies between his "results and those of Dr Torrey, but does so only by "conceding that (however logical his deductions) his "premises have been in at least one essential point "open to objection." If you insist upon establishing Dr. Aikin in a position of your own choosing, or that of any one else, it will prove no very difficult matter to drive him from it. But if you will permit Dr. Aikin to define his own position, I think you will find him exactly where he was. My first paper announces my object to be the simple inquiry, "To what extent will the "illuminating power of coal-gas be impaired by keep-"ing it in contact with water for noted periods?" My results, if at all reliable, showed that a very serious loss of power always followed such contact. These results were not contradicted by any of Dr. Torrey's experiments, and were confirmed by one of them, and moreover are admitted by Mr. Courtenay as belonging to the truisms of gas makers. You concede that many of the discrepancies between Dr. Torrey's results and my own, have been explained, but omit to specify those that still need explanation. Now, if you will oblige me by pointing out the apparent discrepancies yet remaining, I think I can explain all to the satisfaction of any reasonable mortal. And in conclusion, if you will be good enough to specify what is that one essential point in my premises that you think I have conceded as open to objection, and allow me to show you that I have conceded no such thing, you will still further oblige, Most respectfully yours, &c.,

William E. A. Aikin.

WATER-GAS.

For the American Gas-Light Journal.

To the Editor of the "Philadelphia Press."

Philadelphia, Nov. 3, 1859.

I was delighted with your announcement last month, that there was a probability of our gas-bills being reduced from $2 25 to 50 cents per thousand cubic feet—a reduction of seven-ninths of the present cost.

But have you not been led into an error in your estimate? You state the price of the coal-gas in Philadelphia at $2 25—the *selling* price; into which enters not only the cost of material for making the gas, but also interest on cost of construction of the works, wear and tear of works and mains, labor, and a very moderate margin for a sinking fund. On the other hand, your estimate of the water-gas includes only cost of material. Let us compare the two costs fairly.

You say that the water is decomposed by being passed over red hot charcoal, and the resulting gas carbonized by rosin. That from twenty-five to forty pounds of rosin are sufficient to carbonize one thousand feet of gas, yielding a light "thrice as brilliant" as the coal gas. The last statement, I am compelled to suspect, is not *literally correct.* The gas now used in this city yields, from an ordinary four-and-a-half-foot burner, a light equal to eighteen sperm candles. Does the Wilmington water-gas give, from the same burner, a light equal to *fifty-four sperm candles?*

In regard to the comparative cost of the two kinds of gas:

We will assume that thirty-five pounds of rosin will suffice for carbonizing one thousand feet of water gas—being about the mean between your extremes. Your paper quotes No 1. Rosin at $2 75 per barrel, or 280 lbs., say one cent. per lb. Then

35 lbs. rosin *a* 1c. will cost.....	35c.
Add for fuel, say.....	15c.
Cost for material for 1000 ft. of gas.	50c.

In the New York price currents, pale white rosin is quoted at $4 00 to $4 50 per 280 lbs., or say 1¼ cents per lb. If that quality of rosin were used, the cost for rosin alone would be 52½ cents per 1,000 feet of gas. But we will leave the cost for material as above 50 cents. per 1,000 ft.

What does coal-gas cost for material?

The Philadelphia gas-works pay for first quality Pennsylvania bituminous coal, at their works at Point Breeze, say $6 00 for 2,240 lbs. The report of trustees for 1858 states that the average yield of gas per lb. of coal was 4.63 feet, or 10.371 ft. for 2,240 lbs., equal to a cost of 57¾ cents per 1,000 feet of gas.

The coke produced from one ton of coal is much more than is necessary for use in the manufacture of the gas; and from the above cost must be deducted 10 per cent. for proceeds of coke sold for fuel, leaving as the net cost of material of coal gas 52 cents. per 1,000 feet.

Thus it would seem that there is but four per cent. difference in the cost of gas from coal and from water, even under the present advantageous state of the market for rosin.

But let us suppose that the gas-works of Philadelphia and New York were to be changed into water-gas works. What would be the effect upon the price of rosin? Philadelphia consumed last year 480,000,000 feet of gas; not 6,000,000, as you state. At 35 pounds of rosin per 1,000 feet of gas, the works would require 60,000 barrels of 280 lbs. each, of rosin per annum. Add for New York 140,000 barrels, and we have an increase in the demand for rosin of 200,000 barrels per annum.

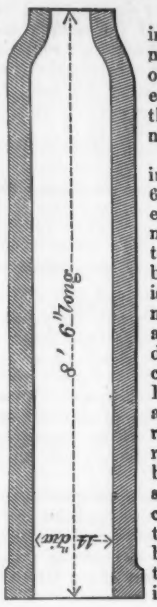
When we know that the total shipments of rosin from Wilmington, N.C., (whence almost the entire supply comes,) was, in 1854, 450,000 barrels, and that the source of supply is becoming yearly more limited, we may judge of the effect upon price by such an increased demand.

On the other hand, the greater the demand for coal, the lower its price becomes. Its source of supply is inexhaustible, and the competition of transportation lines reduces the cost per ton as the quantity to be moved becomes larger.

On the whole, I suspect that there will be no very material reduction in the amounts of our gas-bills in consequence of the introduction of water-gas; and I think you will now agree with me.

Common Sense.

OPEN-ENDED RETORTS.



Sir,—Thinking that the accompanying sketch and description of a retort may be of use to some of the readers of the Journal, I have taken the liberty of troubling you with it. If you think it so, please insert it in an early number.

Its only peculiarity consists in its being tapered down, and having a hole 6 inches in diameter through the back end. On this end is fitted a socket mouth-piece, only three inches long, to be closed with a lid and screwed bar in the ordinary way. The opening is found to give great facilities for mending the retort when necessary, and is also used with effect to keep down the carbon, which is apt to accumulate on the inside of some retorts. By unscrewing the lids, and allowing a current of air to rush through the retort, we are enabled materially to reduce the time required to scurf or burn off the carbon at the end of the season. Retorts made on this plan, can only be used in those works where there is free access to the back of the bench; but the plan is well worh at trial wherever there is a possibility of introducing them.

James Robb.

Haddington, England, October 16th, 1859.

[Mr. John Young, of the Dalkeith (Scotland) Gas-works, states that the invention of the above retort is his own, and that they have been in use in nine different gas-works in Great Britain for three or four years.—Ed.]

REMOVING THE CARBON FROM THE INTERIOR OF RETORTS.

For the American Gas-Light Journal.

When the retort is left open for the above purpose, until the carbon burns off, considerable time is lost, say from one to two or three days, and the action of the cold air on the front end of the retort causes clay retorts to crack, and iron retorts to oxidize.

A much better plan, where steam can be had, is to hang a lid loose on the ears of the retort, having a hole in its centre through which a piece of three-quarter service pipe is passed near to the back end of the retort, the outer end being connected to a steam-pipe.

The flow of steam is regulated by a cock. In this manner the carbon scales off in a fourth of the time, and with much less injury to the retort, and without reducing its temperature.

When steam cannot be easily obtained, it is well to inject a current of air from a smith's bellows, in the same manner as I have described for steam. This plan I believe was first introduced by Mr. John Kirkham, at the Imperial Gas-works here—his works being large, he fitted an air-pipe along the front of the retort beds, with a T piece and cock opposite each "setting," and supplied the air from a fan worked by the steam-engine.

George Anderson,
Engineer, &c.,
104 Leadenhall street, London.

LEAKAGE AND FUEL ACCOUNTS.

Sir,—Now that the subjects of leakage and fuel accounts are being discussed, will you allow me a small space in your Journal, to compare notes with your correspondents?

In the year ending at midsummer last, we used 1634 tons of coal—none of it was Newcastle—but more than half of it screenings, or small, from inland colleries, and requiring considerably more fuel for carbonizing than Newcastle; while the coke produced was inferior in quality and wasteful in the furnaces by reason of its great tendency to run to clinker.

		Feet.
Gas made per station-meter, ...		15,745,500
" supplied to 272 lamps, . .	3,941,500	
" sold by 650 metres, . . .	9,787,500	
		13,729,000
Loss, including gas used on the works superintendent's house, office, &c., .		2,016,500
Or, ...		12-81 per cent.
Gas sold for each ton of coal used, . .		8,400 feet.

The length of our mains is about twelve miles with 960 services.

If the coals cost 16s. per ton, and the gas was sold at 4s. per 1000 feet, the return would be 42s. gas rental for every 20s. expended for coal.

The quantity of coke used for fuel was 460 chaldrons, or 28-15 per cent. of the coke made, reckoning each ton of coal to produce one chaldron of coke; but as I cannot obtain from tar more than 7s. 6d. per ton of 200 gallons, I use most of it as fuel in addition to the coke; and allowing 10 gallons of tar as the produce of each ton of coal, and deducting the quantity sold from what

is produced, it would leave seventy-six tons used as fuel: and, taking each ton as being of the same commercial value as one chaldron of coke, the percentage for fuel would then be 31-25; or, taking the tar at the same value as the coke, weight for weight, the percentage of the coke and tar, used as fuel, on the quantity produced of both, would then be 32-95.

75 per cent. of the coals were carbonized in clay retorts, and without an exhauster.

If any of your numerous readers can show me how to obtain better results from the same materials and quantities, I shall feel much obliged by their recording it in your columns.

London, October 14th, 1859. C. D.

COAL-TAR. ASPHALTE-CONCRETE.

Sir,—I am fully persuaded that coal-tar, now becoming a drug in many of our gas-works, may be made into several useful articles; boiled with the spare heat which any gas-works can supply into pitch, mixed with sand and gravel, and made into blocks of any size or shape, it makes an admirable substitute for stone for under-ground works. It is indestructible, where kept cool.

I have myself just finished a neat little gas-holder tank, 24½ feet diameter and 15 feet deep, built with blocks made as above, and moulded in loam, each block being part of the circle. Blocks of any size or form may be made in this manner. Cylinders of any size for drains might be made in 3 or 4 feet lengths.

Nor is this all the profit. During the boiling into pitch, the pan might be covered, and the naptha collected, as from a retort or still. We know there has been always a steady sale for naptha: it would become cheaper; but new uses would be daily discovered.

H. W. Smith.

Seaham (England) Gas-Works,
October 24th, 1859.

THE HORRORS OF BURNING-FLUID.

We continue the list of martyrs to this infamous traffic, and shall take occasion to lay before the Legislature, at its next sitting, a *résumé* of the victims for whose sufferings they are responsible by not prohibiting, unconditionally, the cause.

Henry Cooke, aged eleven years, was burned to death at No. 245 West Forty-eighth street, on Thursday night, November 3d, by his clothes catching fire while light a burning-fluid lamp. He accidentally tipped the lamp, and the fluid spilt upon his clothes, which took fire from the vapor.

Mary Decker, a young girl, was badly burned by the explosion of a fluid lamp, at No. 162 Avenue A, on Saturday evening, November 5th. The fire was communicated to the building.

Mrs. Ware and her daughter were severely burned last month in Salem, O., by the bursting of a fluid lamp. The child died from the injuries received.

On Tuesday evening, November 22d, a fire occurred at No. 56 Leonard street, caused by the servant attempting to fill a lighted fluid lamp, the vapor igniting.

A young girl, named Mahan, residing in Hudson, N. Y., was engaged, on Wednesday night, in filling a fluid lamp, while one of the wicks was burning, when the flame communicated with her clothing, setting her dress on fire. She was so badly burned, that death followed in about twenty-four hours.

New Method of Making Water-Gas in Paris.—Several journals have already entertained their readers with a new mode of making gas of water, which would leave far behind it all the systems known, and would effect, they say, a complete revolution in industry by its economical application to the heating of machines. The inventor, Mr. Mendt, has already finished experiments, which appear to justify all his hopes. We have not yet been able to see his apparatus work, but we believe that it is composed of a small house stove (*fourneau de ménage*) enclosing a generator of steam on one side, and on the other a vessel with two tubes, containing water and hydro-carbons.

A pipe is fixed in the generator for the purpose of disengaging the steam. It is then expanded in the room above the hearth of the furnace or stove, and, at length, connects itself again to the vessel containing the water and hydro-carbon of which we have spoken.

The steam produced by the generator which operates at low pressure, becomes overheated in passing through the room at the hearth; then it passes into the second part of the apparatus, when it is claimed that the decomposition of the water is effected in certain states which science has never before revealed (*n'avait pas réveillées jusqu' ici.*)

We are assured, but we cannot believe it, that the height of the temperature caused by the steam prepares the disintegration of the constituent parts of the water by reason of its affinity for the carbon, the oxygen separates itself from the hydrogen to form, with the hydro-carbons, the oxygen of carbon, and sets the hydrogen free. A result like this will be, if obtained, of immense importance, and we shall not fail to apprise our readers of the results of the experiments at which we hope to be present soon.—*Journal de l'Eclairage au Gaz.*

GAS, WATER, AND SEWERAGE PATENTS.

UNITED STATES.

25,669.—Wm. Iams, of Baltimore, Md., for an Improvement in Hydrants:

I claim the moveable cylinder, B, and tube, C, when combined with the fixed piston, E, upon supply pipe, A, and so constructed and arranged in relation to the supply pipe that its elevation shall open a direct communication with the main, in the manner and for the purposes specified.

25,948.—Levi Burnell, of Milwaukie, Wis., for an Improvement in Water-meters:

I claim the arrangement of the hollow arbor, B, with a narrow slot, j, in combination with the lips, h, formed by the inner edges of the buckets, D, substantially as and for the purpose specified.

[This invention relates to that class of water-meters in which a bucket wheel is employed, which is caused to rotate by the gravity of the water as it enters the buckets one after the other. The water enters the buckets through a narrow slot in the arbor around which the bucket wheel rotates, and the inner edges of the buckets form lips which cut off the water from each bucket as soon as the same is filled, and cause the stream to pass into the next succeeding bucket. Each bucket is caused to fill to the exact height by means of a counterpoise, whereby the water is measured correctly, and also weighed at the same time.]

26,000.—H. K. Symmes, of Newton, Mass., (assignor to himself and R. W. Holman, of same place), for an Improvement in Apparatus for Manufacture of Coal Oil:

I claim, first, An oil retort, A, in combination with the gas retort D, or its equivalent, for the purpose of saving the gas which escapes from the oil retort, and to improve its quality, substantially as specified.

Second, in combination with the two retorts, A and D, I claim the pump G, or its equivalent, for the purpose of imparting to the gas the necessary pressure, substantially as set forth.

26,014.—B. S. Church, of Manhattanville, N. Y., for an Improvement in Water-meters:

I claim, first, The arrangement of the partitions, g g', in the trough G, as described, in combination with the air-tight chamber, D, chamber, F, and tubes, i, whereby that portion of the water which does not pass through the measuring buckets is prevented carrying off any of the air in the chamber, D.

Second, Arranging in the air-chamber, D, a float, j, in combination with a valve, h, or its equivalent, substantially as and for the purpose described.

26,015.—George Clay, of New York City, for an Improvement in Packing for Sliding Gas-lights:

I claim the combination with the pipe, D, shell, A, and pipe, B, of the elastic tube, C, when the latter is fitted so that its central portion will contract and press upon the burner or upon the sliding pipe, so as to form a gas-light joint, all as shown and described.

[This packing is so simple in its application and so efficient in its action, that it recommends itself to all gas-fitters. It consists simply of an elastic tube the ends of which are expanded over two nipples, whereby its central part collapses, thereby making a tight fit on the sides of a pipe which passes through said elastic tube, and at the same time allowing the pipe to slide up and down.]

26,028.—Leonard D. Gale, of Washington, D. C., for an Improvement in the Manufacture of Gas:

I claim the treatment of bitumen, bituminous coal and their distillates, or their equivalent, by first converting the volatile portions to a state of vapor, at a temperature below a cherry red heat, and then forcing the vapor so generated into contact with a red-hot surface in such a manner that the gas generated may be instantaneously removed from the said heated surface, and thus be prevented from further decomposition.

26,030.—Leonard D. Gale, of Washington, D. C., for an Improvement in the Manufacture of Gas:

I claim the treatment of all woody, resinous, and fatty bodies, as well as all tarry matter, except bitumen, bituminous coal, and other distillates, by first conveying the volatile portions to vapor at a temperature below a cherry red heat, and afterward forcing the vapor so generated into contact with a red-hot surface in such a manner that the gas generated thereby may be instantly removed from said heated surface, and thus be prevented from further decomposition.

26,048.—George R. Osbrey, of Providence, R. I., for an Improved Heating Apparatus:

I claim the combination of the alcohol reservoir and vaporizer with a lamp for heating the same, when such vessels are connected by a liquid pipe, E, and a vapor pipe, F, said pipes acting in such connection to maintain a constant level within the vaporizer, in the manner and for the purpose substantially as set forth.

I also claim, combining with such device for vaporizing, a conical disseminator, I, and a convex detector, K, arranged substantially as specified and for the purpose set forth.

26,070.—Pearson B. Kitchen (assignor to William H. Marshall) of Philadelphia, Pa., for an Improvement in Apparatus for Heating Hydro-carbon Liquids:

I claim the application to gas generators of a hot-air chamber as previously described, and the submerging of one or more air pipes therefrom, into and upon the chemicals for the purposes set forth and described, or any other substantially the same, and which will produce the intended effect.

26,139.—Wm. Wright, of Hartford, Conn., for an Improvement in Pumps:

I claim, first, The construction of the pump by the application of an auxiliary barrel to the working or brick barrel, and connecting both barrels by a double beat valve, thus effecting a combined opening through the auxiliary and the bucket valves with a minimum lift of said valves greater than the area of the pump itself, and obviating to a great degree the frictional resistance that would be produced by passing all the water through the pump bucket valves alone, preventing all throttling, and permitting the engine to work more regularly and economically, substantially as described.

Second, The placing of one pump above the other, when made as above described, and connecting both together and passing the load of one through the working and auxiliary barrels, and the bucket and auxiliary valves of the other, and vice versa, thus allowing the engine to have complete control over the column of water, substantially as described.

26,145.—Darius Wellington (assignor to C. Wellington), of Boston, Mass., for an Improvement in Cocks for Water-closets:

I claim the employment or use of the valve, b, and plunger, B, connected by the stem, C, placed within a suitable cylinder, A, and arranged relatively with the supply and discharge pipes, D E, to operate as and for the purpose set forth.

[The object of this invention is to dispense with the usual cistern or reservoir hitherto forming a necessary appendage to a water-closet, in order that the basin or bowl of the latter may be thoroughly cleansed, and the foul pipe sealed after use. The invention consists in constructing a cock, which is attached to to a pipe containing water under pressure, in such a way that, when its handle is released from the hand of the occupant of the closet and the basin been allowed to close, the cock will close gradually so as to admit, direct from the water-pipe, a requisite quantity of water into the basin or bowl to seal the foul pipe.]

RE-ISSUE.

William M. Henderson, of Baltimore, Md., for an Improvement in Pumps. Patented Oct. 4, 1859:

The two ball valve cages, with the suction valves in their interior, attached to the extremities of a central perforated tube or its equivalent, in combination with the water-ways and discharge valve or valves; the water entering between the plunger valves and alternately discharged from the ends of the pump barrel in direction of the stroke; the whole being operated and constructed substantially in the manner and for the purposes set forth.

ENGLAND.

853.—George Frederick Chantrell, of Liverpool, furnace engineer, and Edward Dutch, of same place, for Improvements in the Apparatus for regulating the quantity of water to be used for the flushing of water closets, and other purposes.

897.—Robert Brown, of 5 St. Paul's Churchyard, London, for Improvements in Stoves and Apparatus for warming and ventilating apartments and buildings.

912.—Patrick Aitchison, of Sheffield, brass-founder, for Improvements in Taps.

966.—John Moule, of Seabright Place, Hackney Road, London, for a New Compound Liquid for illuminating purposes.

969.—William Prosser, of 24 Dorset Place, Dorset Square, London, for Improvements in Apparatus employed in the Production of Light. Provisional Protection.

[This invention refers to apparatus employed in the production of light by the combustion of oxygen and hydrogen or carburetted hydrogen gases on lime or other suitable material.]

970.—George Porter, smith and gas-fitter, for Improvements in valves and cocks. Provisional Protection.

1010.—Thomas Seaville Truss, C. E., of Darlington, in the county of Durham, for improvements in the construction of pipes, and in the mode of joining the same.

1052.—Jean Marie Ciroux, of Brussels, merchant, for improvement in lamp glasses and shades, applicable to gas-burners, light-houses, and railway signals

1058.—James Laing, of the Independent Gas-Works, Haggerston, in the county of Middlesex, engineer, for improvements in wet gas-meters.

1061.—Thomas Lacey, of Grafton street, Westminster, gas-engineer, for improvements in gas-regulators.

1091.—Joseph Souquiere (called Emile), of 29 Boulevard St. Martin, Paris, civil engineer, for a new and improved process in distilling coal.

AWARD OF MEDALS BY THE AMERICAN INSTITUTE.

GAS APPARATUS.

Hertz, Levy, & Alexander, 23 Liberty street, New York: "Werner's Gas Apparatus for Generating Gas from Wood."—Large silver medal.

J. D. Moore, 80 West Nineteenth street, New York: "Portable Gas-works for Making Gas from Fat, Rosin, and Rosin-oil."—Silver medal.

PHILOSOPHICAL INSTRUMENTS.

A. Wilson, No. 4 Wall street, New York: "Electric Gas-lighting Machine."—Gold medal.

S. Gardiner, Jr, 167 Broadway, New York: "Electric Gas-lighting Apparatus."—Silver medal. [An engraving of this invention may be found on page 62, Vol. I., American Gas-Light Journal.]

Portable Gas at Moscow.—It is announced that the Joint Stock Company of Russia, under the patent of the Portable Gas Company of Paris, will proceed (*sera en mesure*) to furnish portable gas at Moscow from the 15th to 20th October.

The management of the construction of the works, and of the apparatus of compression, has been confided to M. Humbert, a young and intelligent engineer, who has for a long time filled the duties of sub-engineer at the works in the rue de Charonne, and who constructed, last year, the Portable Gas-Works of Sestri-Ponente,* near Genoa.

The works are pushed forward with the greatest activity. Six hundred workmen are actually employed on the ground where the works are being erected, and the Portable Gas Company of Paris are, on their part, executing a considerable order for furnishing the reservoirs, regulators, and other apparatus.—*Journal de l'Eclairage au Gaz.*

* Sestri-Ponente is a maritime town in Sardinia, Northern Italy, four miles west of Genoa, the country residence of many of its citizens. Population, 4,500.—Ed.

Canada Lands for Gas-Light Shares.—It will be seen by reference to our first page, that an excellent opportunity offers for parties to exchange gas-light shares for real estate. Maps, showing locality, &c., are at the office of the American Gas-Light Journal.

Another New Mode of Making Gas.—In order to generate gas for illuminating and heating purposes more economically than heretofore, Mr. Gerner, of Bayswater, proposes to mount a vertical retort within a suitable furnace, and fit the retort with one or more pipes for conducting thereto the material to be converted into gas. When making illuminating gas he uses one pipe to supply the liquid hydro-carbon to be converted into rich carburetted hydrogen, and another to supply water, which is intended to be converted into hydrogen. When he requires gas for heating only, he dispenses with hydro-carbon liquid, and obtains gas by the decomposition of water into its elements.—*London Builder.*

WASTE OF CROTON WATER.

We direct public attention to the advertisement of the Croton Aqueduct Board, in another column. Were it not for the signature of one of the Commissioners to the advertisement, we confess we should have supposed it to be a hoax; but as it is undoubtedly genuine, we can assure the Board that the effect of the notice will not be as salutary as they suppose. The whole system of Croton taxation is wrong. The tax is fixed by law *pro rata* upon the width of the lot and height of the edifice, and must be paid by the owner. A person living in a five-story house is charged for the water at that height, with the liberty to use it on each story; whereas we have not seen the day in ten years when the water would rise above the fourth story, nor, we may almost say, in five years, when it would reach that point until long after nightfall, when the factories and public buildings are closed, and then but in drops. The consequence is, that Croton tax-payers feel that they have been over-taxed (light as the rate is), or at least wrongly taxed, and therefore they use the water with careless profusion whenever they can get it.

And now for the remedy. Advertisements are of little use. Appeals from the Commissioners will not effect the object. *The water must pass through the purses of consumers* in the shape of Water Meters—just as gas goes through them in the shape of gas meters. Let the Croton bills be *liquidated* monthly to the tune of so much a hundred gallons, estimated by the tell-tale index, and we shall hear no more complaints of waste; on the contrary, we shall have full reservoirs, and as many clean faces and clean shirts in the streets as ever.

The question as to who makes the best water-meters will be con-idered at another time. That they will come into immediate and universal use is as certain as that water will continue to flow. Consequently, whichever meter comes first on the market, and proves correct, will carry everything before it; and having once established itself, will probably retain the public favor.

TO WATER COMPANIES AND SANITARY ASSOCIATIONS.

We shall be glad to receive from the officers of water companies and sanitary associations, in this country or in Europe, copies of reports or other documents, illustrating the character of the water-supply, sewerage, or other sanitary arrangements, in their respective districts. We acknowledge the receipt of a valuable pamphlet on sewerage, by T. J. Carter, Esq., printed by order of the City Council of Springfield, Illinois. We have also received reports of the water-works in the cities of Cincinnati, Ohio; and St. Johns, N. B.

TO GAS AND WATER ENGINEERS.

We beg the engineers of gas works and water-works to bear in mind that our columns are always open to their communications, which are respectfully invited, and will be always welcome. We are committed to no dogmas, nor to any man. We wish to present the views of all, and promise to give all equal justice in our columns.

AMERICAN PHOTOGRAPHICAL SOCIETY.

This useful society was organized by the adoption of its constitution, March 26th, 1859. Its object is, "to increase and diffuse knowledge of those natural laws which relate to the action of light, and particularly to promote improvements in the beautiful art of photography."

"All men of science, all practical and amateur photographers, and others who are anxious to further the objects of this society, shall be deemed eligible to membership."

The officers are—President, John W. Draper, M. D., LL. D.; Vice-Presidents, Lewis M. Rutherford, R. Ogden Doremus, M. D., H. H. Schiefflin; Corresponding Secretary, A. W. Whipple; Recording Secretary, Isaiah Dick, M. D.; Treasurer, John Johnson.

Sewerage in Paris.—The new system of sewerage in Paris contemplates the collection of all the sewerage water of the city into two great reservoirs, on each side of the Seine, whence it is to be disseminated by steam pumps upon the surrounding country, to serve as liquid manure. It is stated that this plan works admirably in Berlin, fertilizing the sandy plains around that city and bringing them into a high state of fertility.

FAIR OF THE AMERICAN INSTITUTE.

In our brief mention of gas apparatus at the Fair, we omitted two of the most prominent and useful contributions.

The first was the elegant artistic French style chandelier hanging in the centre of the saloon, the production of Messrs. Tiffany & Co., No. 550 Broadway, New York. whose workmanship excels in material and finish, and yet is less in cost than, the French. Paris has certainly allowed herself to be outdone by Tiffany & Co., in this respect.

The second were the less ornamental, but no less useful, clay retorts from the factory of Messrs. J. H. Gautier & Co., Jersey City. This firm owns a bed of superior fire clay, of which they make fire brick gas-house tiles, retorts, and crucibles. These retorts ring like a bell when struck. Their agents in New York are Many, Baldwin & Many, the junior partner of whom we have known for some years, as an energetic, thriving young man. His firm are also large dealers in hardware, as their advertisement indicates.

POTTS' GAS-LIGHT MAIL-STATIONS.

It gives us much pleasure to announce that in obedience to orders received from the Hon. J. Holt, Postmaster General, the cast-iron letter-boxes, of which a full description was given in our October number, were inaugurated in this city, by being attached to the public lamp-posts, on Tuesday morning, 29th November. It will be remembered that they are the invention of Mr. Albert Potts, of Philadelphia, as will be seen by his advertisement in this number. New York will have now a letter delivery equal to that of any city in the world.

WHISPER LOWE!

The great air-ship "City of New York," which was to leave the Crystal Palace grounds after dinner on some day last month, and land its passengers at the sky-parlor window of the London Coffee House before breakfast the next morning, has collapsed after "exhausting" a few thousand feet of gas and a good many thousand American quarters.

Professor Lowe promises to go "higher than a kite' next spring. He probably will, unless he seeks *quarters* elsewhere.

RIGHT-ANGLE CONDENSERS.

A correspondent says—"Gas-fitters do not yet generally bear in mind that all right-angles are condensers," and he insists that most of the evils complained of by gas-consumers, may be traced to this mechanical blunder; he counsels that all pipeage and supplies to burners, should be furnished with curves and bends, instead of elbows and T pieces—he admits that in some very peculiar localities, in large buildings, these objectionable adjuncts must be used—that the substitution of corners and bends for elbows and T pieces, will cost a twelfth more; but that great economy will be exhibited by the meter, a sensible increase of light obtained, and the air less liable to be tainted. He fortifies his communication by stating, that as all right-angles are conductors, they necessarily produce confluent actions, and consequently eddies in the gas in its progress forward—the same phenomenon is observable in all liquids travelling through pipes, or larger channels—it is also traceable in all rooms and buildings at the present day, although not so readily discovered, and from it, he argues that the superior normal cause of a bad ventilation is discoverable—but the most prominent and conclusive evidence he offers, *is that of rivers:* rivers, he says, which *debut* on the ocean, or large arms of the sea, or the superior lakes at right angles, *have, without exception, bars* formed at the point technically called their mouths; whereas, rivers *debuting* at any obtuse angle to any such points, have no bars. In the former, the right-angled pipe is, to the gas, what the ocean or the lakes are to the waters of the rivers—the stronger. The sea or the lakes resist the passage of the river's water, and a confluent action taking place, the earthy and vegetable matters hitherto held in suspension are precipitated—hence the bar—the right-angled pipe resists the passage of the gas in a similar way, and condensation with all its concomitant evils, is the result. Natural laws must be always obeyed for successful development.

HART'S ECONOMIZING GAS-BURNER.

We are more deficient in this country in good gas-burners than in any other gas apparatus. All new inventions appear to have one defect, whatever may be their advantages otherwise, viz., a too rapid flow of gas, causing it to escape without a thorough combustion, and rendering apartments at once oppressive and unhealthy. Our advertising pages present to-day the engravings and description of an admirable burner, invented by Mr. Herbert William Hart, of London, to which we direct special attention, and recommend our readers to acquaint themselves fully with its merits. The principle of this burner is low pressure—not a new one, by any means, but applied so correctly as to accomplish the purpose intended. We have used these burners in our office and residence for some time, and pronounce them very superior in every respect. They emit a broad, full, thin, white flame, a brilliant light, entirely free from excessive pressure, being, in fact, regulator and burner combined. We predict for these burners an extensive demand the moment public attention is drawn to them.

GAS FROM GRAPE SKINS.

We came across in an old book, the other day, an account of some experiments tried in Paris, in making gas by the decomposition of grape skins, and the lees of wine in a close vessel, by which it was thought a carburetted hydrogen would be disengaged, of such a superior quality as to lead to the supposition that it could be substituted for coal or rosin gas.

A pound of dried grape-skins, placed in a white-hot retort, furnished in less than seven minutes, three hunded and fifty quarts of excellent carburetted hydrogen gas. It burned with a brilliant white flame, was without odor, and emitted little smoke in comparison with ordinary gas. An experiment with the dried dregs of wine was equally satisfactory. And so it ended.

GAS-LIGHT LIBRARY.

Our gas-light companies are sadly deficient in books relating to their business. For a hundred dollars a very useful and convenient library can be secured. In this number of the American Gas-Light Journal will be found a list of books indispensable to gas engineers and companies.

Marsh's Sunlight Gas-Works.—The last number of the American Gas-Light Journal contained an engraving of these simple and admirable works, and in our columns to-day is an extended description of them. The chief points which recommend these gas-works to public favor are the self-cleaning principle of the retort (the great bug-bear of all large works), and their unliability to get out of order, owing to the entire simplicity of construction. Mr. Marsh is an experienced, practical gas-maker, and has devoted to the perfection of these works a long course of experiments, the result of which, he asserts, is that one of his retorts will generate 300 feet of gas for any number of consecutive hours—a statement which is fully confirmed by one of his principal customers. Read his advertisement carefully.

Le Journal de l'Eclairage au Gaz.—This is the title of a spirited gas-light journal published semi-monthly in Paris, at No. 24 Boulevard Poissonniére, by Messrs. Chas. Blanchard and A. Le Roux.

It is a quarto, tastefully gotten up, and cleverly conducted, now in its eighth year, and contains, besides a variety of Parisian and foreign news on gas matters, a large number of well illustrated advertisements. Subscriptions are received at the office of the American Gas-Light Journal.

Lithographed Gas-Light Certificates.—Sarony, Major & Knapp, whose advertisement is in our columns, are executing for us orders from gas and water companies, in the most exquisite style. Orders for them can pass through us, if desired, and we will see to their proper execution.

Gengembre's Non-Freezing Fluid.—We are not posted on the principle of this fluid, but recommend those who wish to inform themselves, to address the inventor, Box 1180, Cincinnati, O.

THE AMERICAN GAS-LIGHT JOURNAL represents the three important interests—

LIGHT, WATER, AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of GAS-LIGHTING, and promote thereby the interests of companies and of consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, and DRAINAGE everywhere.

Incidentally with these results, the business of all Gas Fitters and Plumbers, the erection of Gas Works and Water Works, the consumption of Coals, the manufacture of Gas-Pipe, Water-Pipe, Gas Fixtures, Gas-Meters, Water-Meters, Retorts of iron and clay, and their varied apparatus; of Drain Pipes, Ventilating, Heating and Dredging Machines, will be increased immeasurably.

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TO CORRESPONDENTS.

Ten copies of each *original communication*, published in the AMERICAN GAS-LIGHT JOURNAL, are, if requested, at the disposal of the author. Authors should specify, at the head of their MSS., the number of extra copies desired; it is too late after the forms are broken up.

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The American Gas-Light Journal,

ISSUED MONTHLY.

THURSDAY, DECEMBER 1, 1859.

THE printer took upon himself, in our last month's editorial, the championship of wood-gas, by the addition of a little word of three syllables, which the initiated, doubtless, understood, while laymen may have been at a loss to comprehend our meaning. In the third section of the second paragraph, we meant to say: While wood-gas is far from equal to coal-gas as to illuminating power, its manufacture is in many parts of our country, far more economical than the alternative of coal, and far less objectionable than that of rosin.

The printer evidently differed from us, for he made us say "while wood-gas is *not* far from equal to coal-gas," &c., thus reversing the opinions and theories which we have been endeavoring to impress and disseminate upon this vexed question.

No further light has been evolved by the Wilmington water-gas champions since our last. The promised experiments have not been made in this State, nor are there symptoms of any approaching, and we must, therefore, wait patiently the next illumination from whatever quarter it may break out.

We visited the Philadelphia gas-works during the month, where the three great luminaries—coal, wood, and water-gas,—were in full blast, side by side.

An eye more photometrically inclined, might have discovered a superiority between them, but to us they challenged comparison. To prove the matter of smell seriously charged against it, we blew out the water-light, and after a thorough test, must say, that it was almost entirely inodorous. Whatever odor was perceptible, was by no means disagreeable.

The superintendent of the gas-works having telegraphed to Dr. Cresson the fact of our arrival, that gentleman replied immediately, that every facility must be given us to inspect the various apparatus; adding, that he would come from his residence to meet us, but we were not able to wait his arrival at so late an hour of the night. The next day, both Dr. Cresson and his father, John C. Cresson, Esq., Engineer-in-Chief, extended to us many civilities, with a pressing invitation to visit the new works at Point Breeze, which our limited stay prevented.

The New York State Association of Gas-Light Companies, held their first regular meeting at their rooms in the Manhattan Gas Company's building, in Irving Place, on Tuesday, 15th November, and a brief summary of their proceedings will be found in another column.

If this movement is followed up with spirit by the gas-light companies of this State, the benefits will be incalculable to that interest in the country at large. We do not see, however, why the programme should not be enlarged to embrace the entire gas interest of the nation, as suggested in our October number. Should this not be done, the various State companies will be constrained, sooner or later, to organize in local associations.

We have received voluminous letters and pamphlets from Europe within a few days, with some interesting details of the gas-light companies on the continent, which will be laid before our readers in an early number.

Professor James R. Chilton, one of our contributors, whose protracted illness has been a subject of serious apprehension to his friends, has recovered sufficiently to take short drives. He will be obliged to pass the winter in the southern country, so that we shall be deprived of his favors until perhaps next summer.

Professor Aikin replies to Mr. Courtenay's critique on his former articles, and our correspondent T. W. P., enters the list in a review of the Professor's experiments. It is not our province to define Dr. Aikin's position, any further than as we construed his movements, and we abstain from further comment, in order that our several correspondents may express their own construction of it by any review they may see fit to present.

"Glenmore" promises a further elaboration of the motion of gases, his communication in the October number of this JOURNAL, having attracted a good deal of attention throughout the country. He is thoroughly master of the subject.

Water-supply and sewerage have at length obtained a footing within our pages, and promise to be represented permanently now that the companies having these great interests in charge, are furnishing us the information desired. American plumbers have a great deal to learn in the practical operation of a system hitherto deemed quite patent. That the ordinary methods of sewerage is very objectionable, we shall have no difficulty in showing.

We cannot too strenuously renew our warnings to the various Water-Boards in the United States, to adopt an immediate and thorough system of water-meters, as the only means of stopping the wicked and positively dangerous waste of water that is going on everywhere. Numerous enquiries have been made of us why we do not say where the meters are to be had. We will do so before long, and in the meantime, the way should be prepared for them now by the necessary legislation.

The Sanitary Association of this city of which Mr. Frederick E. Mather is President, and Dr. John H. Griscom and Frederick H. Winston, Esq., Vice-Presidents, held their regular meeting at the Cooper Institute in November, but we have no report of their proceedings. Our friend, General Wetmore, has probably forgotten to send us the report, in the multiplicity of his avocations.

To gratify friends, we tried the broad guage in the columns of our last number, which we think, with Brunel, is a failure, and therefore return to the accepted width of the tracks of other American journals. So with other subordinate matter connected with the JOURNAL, and our friends will not think we slight them hereafter, if we do not adopt suggestions which carry a doubt of their practicability on their face.

From England we continue to hear of squabbles between rival gas companies, and between gas companies and the public authorities, about the charge for lighting public lamps, to regulate which it is proposed to attach a meter to each lamp-post, (lucky meter makers!) and between gas companies and their consumers—which would not interest our readers, however edifying it may be to the parties concerned. Westminster Hall has become a mere *retort* house—not inappropriate to the *bench* by the bye.

In conclusion, we offer to the numerous friends of the AMERICAN GAS-LIGHT JOURNAL, our warm thanks for the many favors tendered, and for the increasing encouragement which every mail from Europe as well as at home, places before us.

NEW YORK STATE ASSOCIATION OF GAS-LIGHT COMPANIES.

This association held a meeting at No. 4 Irving Place, on Tuesday, the 15th inst, and elected the following officers for the ensueing year.

WILLIAM W. FOX, Esq., President of the *New York Gas-Light Co.* . . . . . President.
ROBERT NICHOLS, Esq., President of the *Brooklyn Gas-Light Co.* . . . . . Vice-President.
CHARLES ROOME, Esq., President of the *Manhattan Gas-Light Co.* . . . . . Treasurer.
THEODORE W. PARMELE, Esq. . . . Secretary.

The following named gentlemen compose the Executive Committee:

HON. E. W. LEAVENWORTH of *Syracuse Gas-Light Co.* . . . . . Chairman.
RICHARD MERRIFIELD, Esq., of *Albany Gas-Light Co.*
GEORGE W. PARSONS, Esq., of *Rochester Gas-Light Co.*
O. G. STEELE, Esq., of *Buffalo Gas-Light Co.*
CHARLES ROOME, Esq., of *Manhattan Gas-Light Co.*

The association adopted a constitution substantially the same as published in the AMERICAN GAS-LIGHT JOURNAL of September 1st. The following companies were represented, Abany, Brooklyn, Buffalo, Canandaigua, Geneva, Glenn's Falls, Green Point, Hudson, Manhattan, New York, Rochester, Troy, Utica, Williamsburgh, and Yonkers.

Several companies which were not represented, signified their intention of becoming members at an early day. The best feeling prevailed, and much good is anticipated from the desire manifested by their who were present to obtain, and to disseminate correct knowledge on the subject of gas manufacture and supply.

They have apartments handsomely furnished which will be supplied with drawings, models, manuscripts, scientific books and journals accessible to all the members. The secretary will be in attendance to receive and answer all communications relating to the business of the association, and to direct all experiments which may be deemed advisable to advance the science of gas making.

If the association is continued in the same spirit in which it is begun—if the experiments made in all the works of the State are recorded here, there will be not only a great saving in expense by the avoidance of unnecessary repetitions of experiments by each company for its exclusive use, but by a constant interchange of opinions and deductions from previous experiments, we have reason to expect the science of gas making will be advanced, and that the cost of production being thereby lessened, the companies will be able to extend to their customers a portion of the benefit which they themselves derive from this combined action. We think another result will be, that it will convince the companies and the public that their interests are identical, and if so, then the property of the gas companies will be for the general good.

WATER-SUPPLY AND SEWERAGE AS RELATED TO PREVENTABLE DISEASE.

There is every reason to believe that most of the diseases which lessen the sum of human happiness, and shorten the duration of life, are preventable; for our bodily health, like our moral character, is placed by an All-wise Providence very much in our own power—vigorous strength being the normal state for man; while puny imbecility, and stunted physical development, are the results of some known or unknown violations of the laws of our common nature.

Professor Playfair published, some years ago, a series of tabular statements, founded upon minute investigation, and showing that every year in the county of Lancashire, in England, 14,000 deaths occur, and 398,000 cases of sickness, which might be avoided, and that 11,000 of the deaths consist of adults engaged in productive labor. It was further proved from the same documents, that the average duration of life in that populous commercial and manufacturing district is only nineteen years, and that every adult loses more than ten years of active life, while premature old age and preventable sickness deprive him of much more than ten years of working ability, and nearly one-half of the infant population is swept off before attaining two years of age. The pecuniary loss inflicted on the community by the support of removable disease and preventable death in Lancashire alone, amounts, it is estimated, to twenty-five millions of dollars.

Taking these statements as established, which we fairly may, considering the high authority from which they proceed, and the fact that they have never been controverted, it is evident that the want of proper sanitary regulations, by inflicting the vast amount of mischief upon the community, of which we obtain some imperfect glimpses in the above statements, not only cause much social misery, premature widowhood, and preventable orphanage, but by wasting the most valuable productive labor, by necessitating the substitution of inferior for skilled workmen, and by inducing degradation and pauperism, an immense aggregate of national wealth is annually thrown away, and much national misery is produced.

No one acquainted with our American cities will be inclined to pronounce their sanitary condition superior to the general average of the cities and towns of Lancashire; and if, as is probable, the rate of mortality and the ravages of disease among the industrious millions who crowd our large commercial cities be as great as those ascribed to Lancashire, an amount of human suffering is brought to view, which gives a new interest and an indescribable importance to any measures of sanitary improvement which come sanctioned by science and experience. Leaving, for the present, other sanitary measures of great value, we propose to treat of that indispensable, though much neglected class which pertain to Water-Supply and Sewerage; for these are the topics, at the present moment, most adapted for discussion in this journal, and their importance will be seen, if we remember that water-mains and sewers are to a great city just what the viens and arteries are to the human body: the one distributing a life-giving stream through every part; the other carrying off those noxious and poisonous substances which would infuse the elements of destruction and death through every part, if they were not got rid of, and swept away.

Among the imperfect sanitary conditions which produce so much mischief, are usually found defective water-supply, inefficient drainage, fecal fermentation, and the impregnation of the atmosphere with unwholesome emanations from foul drains, ditches, and cesspools. Indeed, it is the opinion of many eminent medical authorities that typhoid fever and diarrhœa are sure tests of the sanitary arrangements of any locality, and that the course of neglected sewerage in any town may usually be tracked by the presence of these tell-tale forms of disease. In Croydon, near London, occurred, not long since, an alarming outbreak of these diseases, which were clearly traced to the causes we have indicated; and it has been often remarked by intelligent physicians that they can tell where the sewers and drains are stopped by the breaking out of these diseases in the houses into which, by this means, the foul gases are forced. The unhealthiness of many of our western cities, and the prevalence there of chills, agues, dysentery, fevers, and cholera, depend much on their low situation, and their proximity to river banks, or to stagnant water; but more on imperfect sewerage, and the want of an adequate supply of pure water.

These opinions are supported by numerous facts, illustrative of the tendency of improved sewerage to ameliorate the health of towns. For instance, we may cite the example of Ashton-under-line, in England, where, in the sewered districts, the average duration of life is six years more than in those portions of the city which are unsewered. At Charlton, again, which is a township of Manchester, the sanitary records show that while the mortality in the unsewered streets amounts to four per cent., in those which are drained it is only two per cent.; and it has been found that the health of the population was so improved after the introduction of sewerage and water-supply, that in one district the deaths almost immediately decreased one in fifty; that is, out of every hundred and ten inhabitants, twenty lives were annually saved, which would probably have been sacrificed had not these sanitary improvements been made. Nor is this an isolated case; for other districts of the city of Manchester record similar facts in their sanitary reports. In Liverpool, too, where two sets of densely populated and similarly located courts were compared together, it was found, that while more than twenty-two persons in every hundred residents in the unsewered courts had serious attacks of illness, only ten in a hundred were so afflicted where sewers were laid. In the west end of London, and in Westminster, extensive marshes once overspread the banks of the Thames, and malignant fevers annually prevailed. At present efficient drainage and an ample supply of pure water have rendered this district one of the most salubrious in the metropolis. In Paris similar improvements have changed uninhabitable and sickly swamps into the fashionable *quartiers* now known as the Faubourgs St. Honoré and Montmartre, and the Chaussé d'Antin.

From these cases, and an infinite number of others which might be cited, we are authorized to conclude, that it is, in the highest degree, unwise and suicidal for any community to allow themselves, in their eagerness for gain, no time to attend to the requirements of public health. For the consequences of this neglect, not only generate disease, and destroy life to a fearful extent, but they are hostile to commercial expansion, social improvement, and intellectual growth. In the Old World and in the New, the same charge of neglect is more or less merited. The energetic inhabitants of New York, and Liverpool, New Orleans and Glasgow, Chicago and Manchester, profiting little by history, by the discoveries of science, and by the disclosures of sanitary committees, have given too little attention to the prevention of disease and to the preserving of the health of the masses. The poor, the sick, and the degraded, have been left helpless in their filthy homes, and, by a strange and remarkable retributive law, have become centres of contagion, spreading misery and death around them. The yellow fever of this country, the typhus fever in Europe, the plague in Asia and Africa, have scattered desolation and dismay; but have too often failed to fix the attention of the panic-stricken multitudes on those few simple preventive arrangements, which constitute our chief, and almost our only safeguard.

TO BRITISH GAS AND WATER COMPANIES AND ENGINEERS.

We are a neutral port. The flags of all theories may sail in, and harbor here. The principle of entire non-intervention is the platform on which the American Gas-Light Journal stands, and those British companies and engineers to whom the columns of any so-called English journals are closed, shall find a place here, *and a circulation there.*

We respectfully invite communications on the subject to which the American Gas-Light Journal is devoted, from any and every person, of any and every shade of opinion, in any and every country. We desire them. American gas and water companies desire them, and American Engineers of each of those noble professions desire them, and will welcome them.

Understand us, we do not say they will not be criticised; on the contrary, we shall admit in reply, from whatever source, strictures—perhaps severe—on all notions that do not square with those of other correspondents. Whoever has kept up with us thus far, has seen how mercilessly differences of opinion have been dissected, and how the most cherished theoretical limbs have been amputated and pitched overboard by our scientific surgeons.

All, therefore, who are willing to enter our columns, shall have a place of shelter, if not of rest.

INTERNATIONAL EDITORIAL COURTESIES.

When the first number of the American Gas-Light Journal reached Paris, the editors of *Le Journal de l'Eclairage au Gaz* wrote us a polite and most friendly note, requesting an exchange, and offering us any of their collection of engravings that we might wish to reprint.

Last month a friend in Paris called at the office of *Le Journal de l'Eclairage au Gaz*, and purchased for us the complete set of that excellent work, comprising its issue for seven years, fully bound, but the editors, on learning accidentally for whom it was intended, peremptorily refused to receive any payment, and wrote us most kindly, requesting our acceptance of the volumes, renewing the offer of their engravings and their services "in every species of thing in which you can make our intervention useful." Now, we wish to draw the attention of American Gas Engineers to this fact, because it is for their benefit that we shall avail ourself of these kind offers, and we hope that it will be responded to by a general subscription to that excellent journal in this country.

OUR GAS-LIGHT TABLES.

We postpone until, perhaps, our next number, the publication *in extenso*, of the tables; meantime we present them abridged, in double file, to enable those who wish to keep pace with new additions, to do so. Most of the companies have filled up blanks. Will not the remaining ones please do the same?

They include, to-day—

330 American Companies, representing		$45,682,950
15 British Am. do.	do.	1,712,000
17 Cuban, Mexican, and S. Am. do.,	do.	5,000,000
Total, 362 Companies.	Total capital	$52,394,950

We intend, at the earliest practicable moment, to commence sketching each company, as to its history, condition and prospects.

SEWERAGE OF THE CITY OF BROOKLYN.

We are indebted to Dr. A. N. Bell, vice-president of the sanitary association, formed last summer in the city of Brooklyn, N. Y., for several valuable papers and reports on subjects connected with the improvement of the health of large cities and towns. Among these papers, we find the following essay, which was read at one of the early meetings of the association. It is a source of gratification that the recent difficulties between the city authorities and the Board of Water Commissioners have been settled, and that this city has now no reason to fear the stoppage of its water supplies. The Sewer Commissioners of the city have, for two years, manifested much vigor in forwarding the work entrusted to them. With a view to increase the healthfulness of the district, they have been seeking information from all sources, and have adopted those methods which, on the whole, seemed adapted to the locality, and sanctioned by the widest experience. Mr. J. W. Adams, one of the leading members of the sanitary association, at the request of that body, prepared the following paper, with a view of stating some important facts respecting sewerage, and bringing them before those most interested, in such a form as to command their attention. We have slightly condensed his address, and, without endorsing all the opinions it contains, we have no hesitation in commending it to the thoughtful perusal of our readers. After some general remarks, Mr. Adams proceeds as follows:

Of what use would it be, and what salutary result could be anticipated from the most perfect plan of sewerage in a city which it is possible for the art of man to devise, whilst the residents were permitted to sow disease broad-cast, by filling the gutters with pestilence, breeding filth, and storing upon their premises abominations in vaults, the exhalations from which are known to be deadly, to such a degree that the advocates of their removal admit the plea of the danger of disturbing them as an argument in favor of covering them up, rather than cleansing and filling them; we allude now to the privy-vaults and cesspools, neither of which are any longer needed, but both of which may be seen in process of construction at the present date.

Many residents now say they have fine large cesspools and vaults, sufficient for the length of time they propose to occupy the premises, why should they be subjected to expense because their neigbor's organization happens to be more sensitive than their own? On broad sanitary principles, we say, that whatever tends to lower the general tone of health, and thus, if not powerful enough to produce disease, yet paves the way for its introduction, is a public nuisance, and should be regarded as such. "We must not forget," says Dr. Smith in his examination before a Parliamentary Commission on this subject, "that there may be extraneous agencies acting on us, which make more impure that which is impure among ourselves, and that to whatever pitch of cleanliness we may ever arise, as long as a neighbor is not so, we are subject to the seeds of pestilence, as we have, from sad experience, in all ages, learned, and also in whatever state our own premises may be, unless those of others are removed from the state of producing pestilence, we also are subject to be threatened with its seeds, and the lesson we should learn is, to be doubly careful, that when it does come, it may die out from the excellency of our arrangements, leaving nothing upon which it can feed."

That the evil attendant upon the use of privy vaults is not removed by the circumstance of the water supply being no longer in danger of pollution from that source, may be seen in the fact that the area of privy vault surface exposed to ærial evaporation in this comparatively thinly built city, is equivalent to an open ditch of the width of Fulton street, from the ferry to Flatbush avenue, or a canal over six miles in length and twenty feet in width, and that the daily average excreta, solid and liquid, from an average of many experiments, is estimated at nearly three pounds to every individual (2.875) or half a ton per year for every individual of the population.

In older countries the refuse of cities, particularly the human excreta is much sought after as an enricher of the soil, which is not the case here. Its dilution with water, to the large extent required for its speedy removal from dwellings, enhances the cost of its preparation for transportation and agricultural use to such an extent as to retard very materially the introduction of water closets into private residences.

In Paris, Amsterdam, Berlin, and elsewhere on the continent, the night soil is considered too valuable in its original shape to be subjected to the dilution necessary for its removal by water, and hence the general use in these cities of the cesspool or vault; but these cesspools are very different structures from those we are accustomed to see here. They are constructed to retain, or aim at doing so, and under government direction, everything deposited in them until removed by hand or by machinery, and do not permit of the percolation of their contents into the surrounding earth. With what success the most perfect (those of Paris) retain the exhalations from passing into dwellings, those who have visited that city can tell. Here, on the contrary, to diminish the expense of cleaning, the cesspool is built designedly in a loose manner, in many cases, to permit the absorption into the soil of all the more fluid parts of the sewerage. It is regarded, in fact, as the head of a drain into the soil. If the use of cesspools, where every precaution is taken to prevent the poisoning of the neighboring earth and air by its exhalation and absorption, should be regarded as a nuisance, extremely dangerous to the health of the inhabitants in whose midst it is placed, and strenuous efforts are being made to abolish them, as is the fact in the above mentioned cities, how should it be regarded here, where no such precautions are taken against their ill effects? It is scarcely necessary to revert to the deadly character of the exhalations, and the indifference shown by many to their removal can only be attributed to their ignorance on the subject.

A glance at the wants of some animals of a lower order than man, may be of service to such. Where attention is paid to the proper keeping of animals, it is found to be injurious to allow them to lie amidst the fumes of their own dung. The Zoological Society, in London, suffered great loss from neglect of this law: a marked improvement followed the observance of it, in the health and longevity of the carnivora, as we learn from the London Board of Health reports. Skilful trainers of horses for trotting and racing (the highest development of the animal) are very careful in this respect, the thorough cleanliness of the stables, and the removal, three times a day, of all dung and urine to such a distance that no fumes from them may reach the animals, is considered in England as a necessity. Even among dogs, it was found that the mere removal of their kennels in the same yard did not avert the disease known as "kennel lamness," but it was finally traced to defective drainage; and a breeder of much experience lays it down as a law, that the removal of all foul matters from within, or beneath the kennels, must not only be constant and complete, but *distant*, and that no opening of a drain should be allowed within at least 100 yards of the kennel. And yet we expect man to thrive under circumstances found unfavorable to the proper development of a dog.

Archdeacon Paley was accustomed to direct particular attention of travellers in foreign countries to the mode in which the people dealt with their excreta, stating that from this single fact, a greater insight might be gained into their habits of cleanliness, decency, self-respect, and industry, and, in general, into their moral and social condition, than from facts of any other class. Where, in the scale of refinement and civilization, should we be placed by such a standard of judgment? It is a deplorable proof of the want of information, and of due appreciation of the circumstances on which the improvement of the moral as well as the physical condition of the population depends, that the existence of filth in houses and towns, the prevalence of filthy habits among the people, and the efforts to remedy or mitigate the attendant evils, are often treated with unconcern, as if the subject was of no consequence, or fitted only to excite disgust. It may not be needful that persons on whom no duties in this behalf devolve, should enter closely into the details in question; but it is incumbent on the local administrators of the law for improving the sanitary condition of the people, to treat even the minutest and most repulsive details with the like scrupulous and anxious care with which physicians deal with the most offensive particulars attendant upon sickness, suffering, and mortal disease. Allowing that the *majority* merely of the inhabitants admit the propriety of abandoning the use of privy vaults and cesspools, upon an introduction of an ample water supply, is not sufficient; many still adhere to their use, and, as before hinted at, the cleanliness of the majority is not a sufficient safeguard. Animal poisons do not require to be given in large doses to produce bad effects, and it is not a subject to be left to individual misjudgment or caprice.

A further argument for the abolition of the privies may be found in the fact that the dimensions of our sewers are calculated to receive the whole water supply after its use, and the effect of increasing this waste water, to which we look mainly for keeping the sewers clean, increases in a greater ratio than does the resistance which it brings with it, that is to say, the waste water from one house might not be sufficient to scour out the refuse from that house; but ten times that quantity, by its increased head and velocity, would have more than ten times its effect. Hence the more extended introduction and use of the water, the more efficient and certain the desired action of the sewer.

We have thus far considered the greater evil of the privy vault, without laying so much stress upon what is called here cesspool, and which receives but the waste water from the house. The evil and danger to be apprehended from the latter is of the same kind as that from the vault, but differing somewhat in degree. The quantity of foul water which runs into the cesspool is far greater than that into the vaults which we have been considering, but it is not considered so deleterious to health, as not being so highly charged with animal matter; but the waste water, and the refuse from kitchens, laundries, baths, and manufactories of different kinds, when we consider their much greater bulk, being estimated as at least fifty times that of the liquid and solid excreta, and the great quantity of animal and vegetable matter which they hold in suspension, must be regarded as forming an element for mischief, but little less than the one which we have been considering, and whatever its amount may be, it is so much added to the extent of an evil already sufficiently great to justify our united effort for its suppression. The conclusion to which we arrive is, that the cesspools and vaults should be abolished by authority, as a sanitary measure, wherever the construction of sewers has rendered their use unnecessary.

The next point for determination is, how shall this be done—whether by closing them up without cleaning them out, or cleaning them, and filling them up? Undoubtedly, the latter method is to be preferred. We have no experience on this head in this locality; but the practice in London is now *to clean them in all cases before closing them*—the law compelling both operations. The contents of these cesspools lose nothing of their deadly character by remaining closed, and the changes and improvements of property constantly going on, render them liable, at any time, to be broken open, under circumstances and in situations calculated to give full effect to the deleterious gases generated, and sickness has, in several cases, been traced to the accidental opening of long-closed cesspools, the existence of which was previously unknown. In the evidence of Mr. Donaldson before the Parliamentary Commission in London, in 1858, in reference to the abolition of cesspools, his views were, that the ground in the neigborhood being highly charged with water, the foul matter from the cesspools is kept constantly saturated; but upon completing the deep drainage, the ground drying, will permit the gases from these putrid cesspools to rise to the surface, and escape into the yards and houses, where there is little ventilation, so that serious consequences might result. Mr. Donaldson believed that this was the cause of the severe outbreak of cholera immediately after the construction of some new sewers in the vicinity of Broad street and Portland street, some years previous. The emanations from these cesspools laid dry, will continue for a time, and then cease to be offensive, or hurtful, so long as the ground is kept dry; but let a flood occur, and the ground become saturated again with water, and again there will be an emanation of foul gases; first, by evaporation from the grounnd, and then by the fermentation which would result from the contents of the cesspools being saturated with water, and then slowly drying again, and this will be repeated for some time. Mr. D. said he would urge upon the authorities the necessity of *causing every cesspool to be emptied before the completion of the main drainage*, otherwise he feared that for a year or two serious results would arise from the emanation of gases from these putrefactive matters when drained dry. This regulation is now adopted, and enforced in London.

The objection urged against the cleansing before filling up these cesspools, is the danger to be apprehended to the health of the neighborhood during the process of cleansing. If this be a serious objection, it were better to meet it now than after the locality is more densely built upon; and the method in use in Paris, and to some extent in this country, would, with proper precaution and supervision, be attended with but little inconvenience and danger; and the very fact that there *is* danger attending the cleaning of these vaults, is one of the strongest arguments against the retention of their poisonous contents in or arounnd our premises.

With reference to the waste water from the roofs, no longer needed for domestic purposes, we propose that the leaders from the roofs shall connect, where possible, (untrapped) with the sewer. For this purpose, we propose, in the first place, of aiding in scouring the same, to which end, the head, and consequent velocity of the water, renders them peculiarly efficacious, as is shown in Chicago, where the connection of the down spouts from the houses has thus far preserved the sewers clean, and wherever such connection is not made, deposit has been found to accumulate; the grades in that city, it should be observed, differing slightly from any absolute level: and, secondly, that by being untrapped, an outlet is afforded for the foul gases in the sewers, thus dissipating them with the least possible inconvenience to the inhabitants.

That the system of pipe sewers, with abundant water-supply, will diminish the amount and virulence of the gases ordinarily generated in large sewers of deposit there can be doubt; but much of the refuse from houses, in its normal condition, and before it has undergone any change whatever, is highly offensive, and unfavorable to health. Some outlet must be afforded for this. The current of water in a sewer produces a current of air in the same direction; but if its outlet or opening for discharge be covered by a high tide, or any unfavorable circumstance exist in the transmission of a downward current, the pressure induced on the enclosed air will force it through the private drains into the houses, or into the streets, through the basins.

It is presumed that each private drain is provided with a water or syphon trap for foul air, decided by long experience to be the most efficient form of trap; but it is well known that under pressure, water will absorb this gas from below, and give it off from the surface. Hence, if this sewer be not ventilated by some means, the foul air will find its way into the house. This subject is considered of so much importance, that various plans have been suggested for the removal of these gases on a large scale, such as the building of large furnances, with high chimnies, the gases being, to

a large extent, combustible; but all these plans look to the possibility of bringing these gases to certain points, comparatively few in number, and, of course, at some distance from each other; whilst the gas itself is generated, more or less, at or near each house, and will be liable, at all points, to interruption, which may lead to its escape into the houses themselves.

This subject is replete with difficulties, and we have but little practical acquaintance with it in this country. We *know*, however, that most of the gases generated under a putrefactive or fermentative process, are warmer and lighter than the surrounding air, and if the descending spout from each house were connected with the sewer, a large amount of foul gas would be harmlessly dissipated at the house top. It would be desirable, in view of this, that all roofs be required to slope towards the front. The water no longer being needed from them into the yards, and as closely built blocks will be more or less imperfectly ventilated at the rear, it is desirable that no additional impediment to thorough ventilation be thrown in the way. We would propose, then, that wherever no serious impediment exists to the arrangement in houses already built, down spouts from the roofs shall be connected with the street sewers, with a view to their aiding in scouring the latter, and that, for the purposes of a general ventilation, these connections be untrapped, wherever it can be effected without inconvenience to neighboring property. These provisions can with propriety be embodied in a Building Act.

The openings in the street in the man-hole covers as now constructed, should be regarded as temporary. Better that the gases pass into the street than be forced into the houses. Whenever ventilation is afforded by the down spouts from the roof, these openings can with propriety be closed, but not till then.

From these remarks, our builders, plumbers, and sewer-contractors, will see the importance of giving the most careful attention to securing the proper description of drain-pipe, and to the adapting of their plans to the peculiar exigencies of different localities.

CORRESPONDENTS' COLUMN.

The following letter from Dr. Millington, one of the first scientific men of the Southern States, has given us great pleasure, and we print it as an evidence of the growing interest in the subjects treated by the American Gas-Light Journal in this country. We shall welcome any communications from Dr. Millington:

Medical College, Memphis, Tenn., November 21st, 1859.

John B. Murray, Esq., New York:

Dear Sir,—The second number of your American Gas-Light Journal accidentally fell into my hands on Saturday last, before which time I did not know of its existence, and although it is very similar in its contents to an English work that I have long taken, yet I wish this also as treating of our own country. I, therefore, inclose you three dollars in gold, to pay the first year's subscription, and will thank you to forward the work as published, including the first number, as I shall bind it, and wish to have it complete. I have long been practically concerned in gas-works, and will now and then send you a paragraph for printing that may be interesting, particularly respecting the Memphis City Gas-Works, of which I am the president.

. . . . . .

I will do all in my power to promote the circulation of your useful and interesting Gas-Light Journal.

I am, dear sir,
Yours, very truly,
JOHN MILLINGTON.

[*From the York (Pa.) Gas-Light Company.*]

Please find enclosed $3—our subscription for one year to the American Gas-Light Journal.

I was fearful that your Journal, after the first few numbers, would be brought to a dead stop for want of gas to keep it going; but I am glad that we were mistaken, as the last number has in it more illuminating power by way of general and useful information than any of its predecessors; and so may it continue to shine, and increase in light from month to month.

[The York Gas-Light Company has evidently no idea of our gas-tronomical resources. We have not begun to let on the gas yet. We are only laying our mains; and if no enterprising journals tap them again, we may let on a stream next year that will be seen from Constantinople to Cape Horn.]

[*From a Gas Engineer in London.*]

* * * * * * *

It may be interesting to you to know that the American Gas-Light Journal is well thought of here. It is considered racy, clever, and useful, and I hope that the English people will back up their opinions with their orders.

[Thank you. We find this to be one of the few cases where people "back up" by "coming forward," and they have done so liberally.]

The Patent American Burner.—One of the so-called English journals has an extended statement of "Trials with the Patent American Burner," by Andrew Fyfe, Esq., M. D., Professor of Chemistry, King's College, Aberdeen; but as no indication is given as to whose patent "the" American burner is, we would confer no benefit by reprinting it. This is a fair specimen of the indefinite manner in which these so-called English journals represent matters relating to American industry and invention.

Boston Purifiers.—Eels clean the Cochituate water pipes. A few days since an eel six inches in circumference and thirty-four inches in length, emerged from a hydrant at the Boston Gas-Works.

ANSWERS TO CORRESPONDENTS.

Old Friend, of Va.—*You are right; there is not a word of truth in the insinuation, for it happens that not a wrapper went to Europe addressed in red ink! It is a mere dodge to divert attention from the exposure of the piratical expedition among our tables.* Hinc illæ amaræ lachrymæ.

L. Z. T., of Miss.—*The Dry Lime Purifier is now preferred, as you suppose. It was introduced by Berard. We are aware of the errors in our tables in this respect, and will rectify them in due time.*

Bookworm, of Ky.—*You are quite correct in saying that asphaltum has been tested as a material capable of yielding illuminating gas. In the Annual of Scientific Discovery, for* 1851, *p.* 84, *you will find that carburetted-hydrogen was produced from the dry distillation of asphaltum. Dr. Gemer professed to be able to manufacture gas from that substance cheaper than from coal or rosin, or other hydro-carbon, and gave the following table of volatile matter and carbon existing in coal and bitumen:*

		Volatile Matter.	*Coke, or Carbon.*
Bitumen of	*Trinidad,*	65.50	36.57
Do.	*Barbadoes,*	61 60	36 90
Do.	*Cuba,*	63.00	34.97
Do.	*Yucatan,*	62.60	35.20
Coal—best	*Cannel,*	44.00	52.60
Do.	*Liverpool,*	40·48	54.90

These experiments, like those of water, wood, &c., have succumbed to coal, to which the finger of Providence points unerringly, as the only reliable source of light and heat, as it does to water as the only element to navigation.

Gas-Light Club, of O.—*We paid* $8 *per annum for one copy, and accept another in the way of exchange, because requested; that goes direct to the mill, through our waste basket.*

N. D. T., of N. J.—*Pure hydrogen possesses but little illuminating power, but emits great heat. M. Gillard endeavored to remedy that obstacle by passing a jet of steam over a bed of incandescent charcoal in a retort, producing hydrogen and carbonic acid gas, and removing the latter by the action of quicksilver. He then fitted an apparatus of platinum wire to the burner, by which the previous unsteady flame was converted into an intensely white light, without the emission of smell or smoke. It was stated that the hydrogen could be manufactured for about* 8 *cents per* 1000 *cubic feet. And there it ended.*

E. N. P., of Ind.—*If the negative pole of a spark communicates with the ground, the positive pole being isolated, the illuminating power is twice as great as if the positive pole communicated with the ground, and the quantities of electricity producing the explosion in these two cases are to each other as* $\sqrt{2}$ *to* 1. *In gases the resistance to elective explosion is proportioned to their pressure. So says Masson.*

H. B., of N. C.—*It is probably M. Van Alsten, of Rotterdam, to whom you refer as having fallen a victim to his devotion to science. While writing a work on chemistry he wished to test how far a man might with impunity inhale hydrogen gas, and the last breath killed him. Like the Irishman's horse who had just learned to live without eating when he died; rendering Paddy's loss so much the greater.*

S. B. T., of O.—*Naptha has been used frequently in place of chloroform. It induces deep and tranquil sleep, and less stentorious breathing, but the effect on the action of the heart is more dangerous than choloform.*

L. & S. of Ky.—*The passage of gases through pipes depends entirely upon the size, position, and level of the pipes, upon the number of angles, and a thousand other contingencies. Give us the particulars of your pipes, and we will give the result.*

R. G., of Ala.—*There are several English inventions of water meters, the most of which are unknown to us, but we expect to present their various points before our readers very soon. One invention only, by an American, has come to our knowledge. Watch our columns for a full exposition of them early next year.*

N. P. D., of Me.—*We repeat what we said in our letter to you. Mr. John C. Cresson is the Engineer-in-Chief of the Philadelphia Gas Works. His son, Dr. Chas. M. Cresson is his assistant. As you persist in your opinion, write to either of them on the subject of your letter to us, and see what he will say. Neither of them is interested in the matter to which you allude, as far as we know.*

Fifty Pence, of N. Y.—*Falsehood consists quite as much in* suppressio veri *as in* perversio veri. *It would have "spoiled the story" to tell that a draft was sent, on our London bankers for any sum that had been expended in postages, and that it was returned unused. The one hundred pence have been since paid in British postage stamps, which will heal that wound.*

Rosin for Gas-Makers' Use.—The supply of rosin for gas companies is now centred almost exclusively in the hands of James H. Brundage & Co., No. 38 Burling slip, whose advertisement is on our first page. Besides the advantages of being good judges of rosin, and long familar with the business, their readiness to purchase the tar renders their house preferable to others to deal with.

GAS-LIGHT-INGS.

Brooklyn, N. Y.—The Citizens' Gas-Light Company, whose organization we noticed in our last number, are proceeding to erect their works under the able engineering of Mr. Tyler Sabbaton, as fine a specimen of a young American gas-engineer as is to be found on this continent.

Manhattan, N. Y.—The Manhattan Gas-Light Company have purchased three blocks of ground, extending from the Tenth avenue to the Hudson River, and from Sixty-fifth to Sixty-sixth street, comprising nearly 200 lots, and have broken ground preparatory to the erection of new works capable of producing three million feet of gas per day. They will contain 900 retorts and six gas-holders—equal to a storage of 2,000,000 cubic feet. These works will cost about $1,500,000, of which $150,000 will be expended in duplicate mains 18 and 20 inches diameter. The gas will cross the city to the East river by a main 3 feet in diameter.

Sunbury, Pa.—Gas-Works are in process of erection at the coal-breaker of the Treverton Coal and Railroad Company, near Sunbury, Pa., in order to obtain sufficient light to enable them to work the machine by night as well as day.

West Cambridge, Mass.—This town was lighted by gas for the first time on the evening of Thursday, 24th November.

Melbourne, Australia.—The stock of the Melbourne Gas-Light Company commands 52 per cent. premium. The last dividend was at the rate of 12 per cent. per annum; but the profits realized were 18½ per cent. The price of gas to private companies is $5 per 1000 cubic feet, and $85 (per annum, we suppose) is paid for each public lamp. English coal costs $20 per ton, and colonial coal $12 50 per ton.

The Charge of the Four Hundred.—*Punch*, or some other English wit, says, in reference to our four hundred companies—"American gas-bills are called, in military phrase, 'heavy charges of the *light* brigade.'"

Gas-Lighting of Railroad Cars.—The *Scientific American*, to which we are always indebted for our American Patent information, says that Messrs. Albright & Miller, of Grafton, Va., have invented a series of gas-burners for a railroad car, to be supplied with gas from a portable gasometer set in one corner of the car. The connection is formed by a flexible tube, which allows the gasometer (which has flexible sides) to descend as the gas is consumed. To supply the gasometer with gas, it is disconnected from the main pipe of the burners, and carried to the gas-works. This appears to be a good plan for lighting railroad cars and travelling vehicles generally.

The Breath of the Devil.—A lady, residing within the lamp and watch districts of New York City, steadily refuses to have the Manhattan Gas inserted into her house, because, she says, *it is the breath of the devil.* She must have had a sniff of the crittur, purified by the wet-lime process, with a shot of sulphuretted flavor sticking to it!

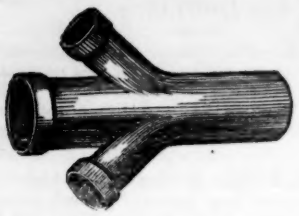
"You may break, you may ruin the *pipe*, if you will,
But the smell of the *sulphur* will hang round it still."

A Pennsylvania Dutchman's Demijohn of Gas.—A Pennsylvania gas engineer told us a good story of a Dutchman from the interior of that State going to the gas-office to get a demijohn of gas. He said his *frau* vas going to have a partee mit some neighbors, and dey vant to see tee gas, and he had promised to his *frau* light tee lamps mit gas, and had brought a demijohn to fetch him home. No persuasion would convince him that gas was not transferable in such vessels. He had travelled ten miles fur him, and de volks would *whale him* (the Dutch mode of criticising deficiences in mine host's entertainment) if he gave dem no gas mit deir supper. At length the engineer consented, and, filling the demijohn with ammoniacal water, sent the Dutchman home in high glee. What astonished him most was, that there was nothing to pay. He probably found "something to pay" when his friends were assembled to see him light his lamps *mit tee gas.*

GAS-LIGHTING BY ELECTRICITY.

Into the article, in our last number, describing Wilson's plan of gas-lighting by the electric spark, a statement was smuggled, which we now correct. We were made to say—"Mr. Gardner's claim for letting on and "shutting off gas is not construed as covering *the doing* "*it by electricity*, but doing it *gradually or by degrees.* "The doing it by electricity is still a public right."

This is not true; it is not a public right. Mr. Gardiner's claim is correctly set forth on page 62, in the October number of the American Gas-Light Journal. "*This plan of lighting* (by the battery) *is that of S.* "*Gardiner, Jr., to whom two patents have been granted—* "*one December* 2, 1857, *wherein he claims broadly 'turn-* "*ing on or shutting off inflammable gas by degrees or* "*gradually through the agency of electricity, for such* "*purposes as are described in his specifications.*'"



GAS, STEAM, SMOKE, PURE WATER AND SOIL PIPES,

CLAY RETORTS, TILES, BRICKS,

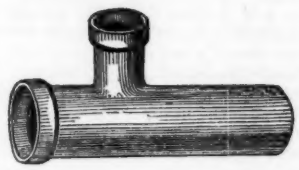
AND EVERY VARIETY OF FIRE GOODS.

JOSEPH CLIFF,

WORTLEY FIRE-BRICK WORKS,

Near Leeds, England.

T. W. PARMELE, Agent, No. 4 Irving Place, New York.



THE AUBIN VILLAGE GAS WORKS

Are now building for the city of *San Antonio*, Texas, and for the following villages, viz.: *Greensboro'*, N. C.; *Dover*, Delaware; *Jersey Shore*, Penn.; *Flemington*, N. J.; *Bath*, Steuben Co., N. Y.; *Plattsburgh*, N. Y.; *Rutland*, Vt.; *Point Levi*, C. E., and *Gloversville*, N. Y., where they are being substituted for Rosin Gas Works.

Being adapted to any material containing gas, the AUBIN WORKS use as the gas-making material, cotton seed at the South, rosin in the Carolinas, cannel coal in Pennsylvania, and rosin and coal mixed in the Northern and Eastern States; and are so simple in construction and operation, that Gas-Companies, even in small towns, can make *a rich, and therefore cheap Gas*, and still pay dividends. Parties inquiring will be referred to towns of 3,000 to 4,000 inhabitants, using the Aubin Works, where the net earnings on the stock are from ten to fifteen per cent.

General Office of the AUBIN GAS-WORKS COMPANY,

44 State Street, Albany, New York.

TO PREVENT THE FREEZING OF GAS-PIPES.

FOR HOUSES, &C.

JOHN WALTON'S

PATENT.

Fig. 1

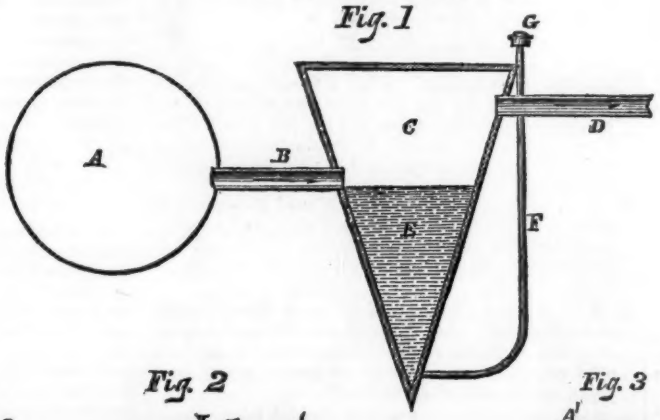


Fig. 2

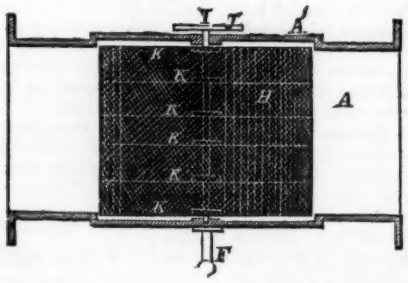
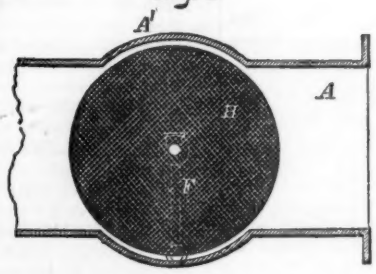


Fig. 3



FOR GAS WORKS.

FIGURE 1.—To be placed in the Street.

(A represents the street; (B) the connecting pipe; (C) the vessel; (D) the service pipe; (E) the alcohol or other liquid; (F) the pipe used to fill the vessel; (G) the cap to close the pipe.

FIGURES 2 and 3.—To be placed on Main at Gas Works.

(A) represents the main pipe; (A') an enlargement thereof; (H) a wire gauze cylinder, which is rotated slowly; the lower port of the pipe is filled with alcohol or other liquid, keeping the cylinder constantly wet; (K K, &c.,) show simple disks within the wheel; (H) to increase the wetted surface; (F) is the pipe used to fill or withdraw the liquid used:

The undersigned would respectfully call the attention of Gas Companies to his improved ANTI-FREEZER, which he guarantees to prevent the freezing of all pipes to which it is applied, at a less cost than any other known process. Further information can be had by addressing—

JOHN WALTON, Louisville, Ky.

ELLIMAN BROTHERS,

COMMISSION MERCHANTS,

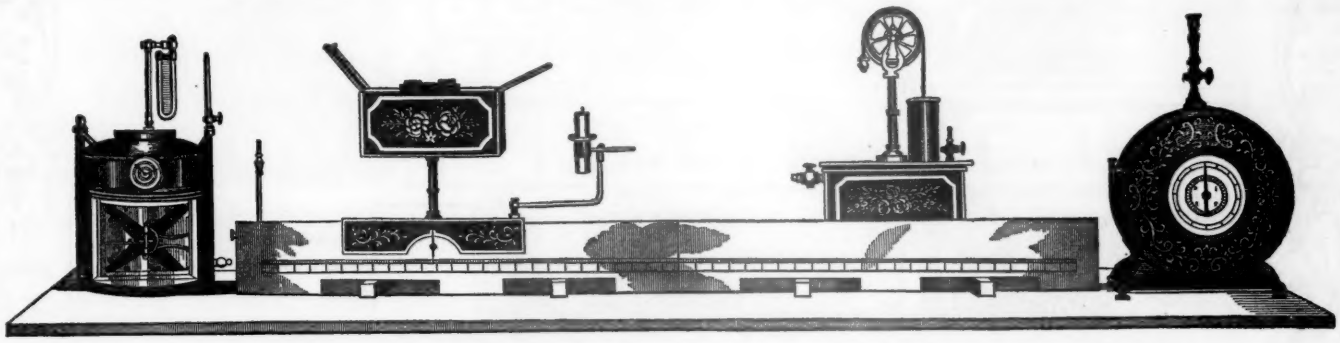
217 PEARL ST., NEW YORK.

IMPORTERS OF BELGIAN FIRE-CLAY GAS RETORTS,

AND

DEALERS IN TILES, ARCH-BRICKS, FURNACE DOORS, MOUTH-PIECES, COVERS, AND ALL OTHER FITTINGS, OF THE MOST APPROVED PATTERNS, FOR SETTING CLAY RETORTS.

Importers and Dealers in Wrought-Iron, Gas, Water and Steam Tubes.



PRESSURE REGISTERS,

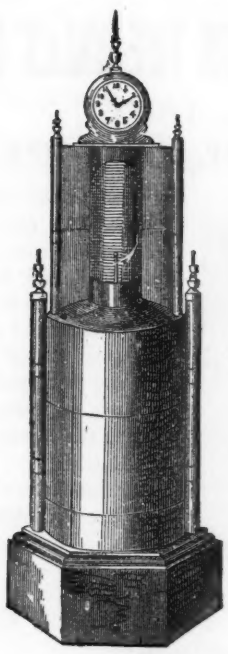
PRESSURE INDICATORS,

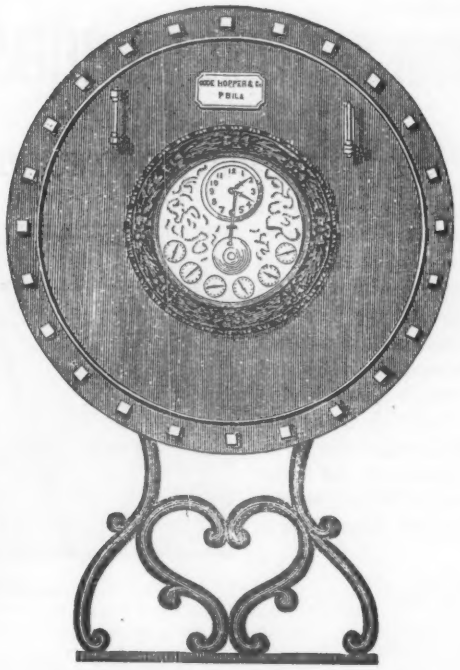
PRESSURE GAUGES,

PHOTOMETERS,

GOVERNORS,

STATION METERS,





CUSTOMER METERS,
(Wet and Dry.)

EXPERIMENTAL METERS,
(Wet and Dry.)

SHOW METERS,
(Wet and Dry.)

METER PROVERS,

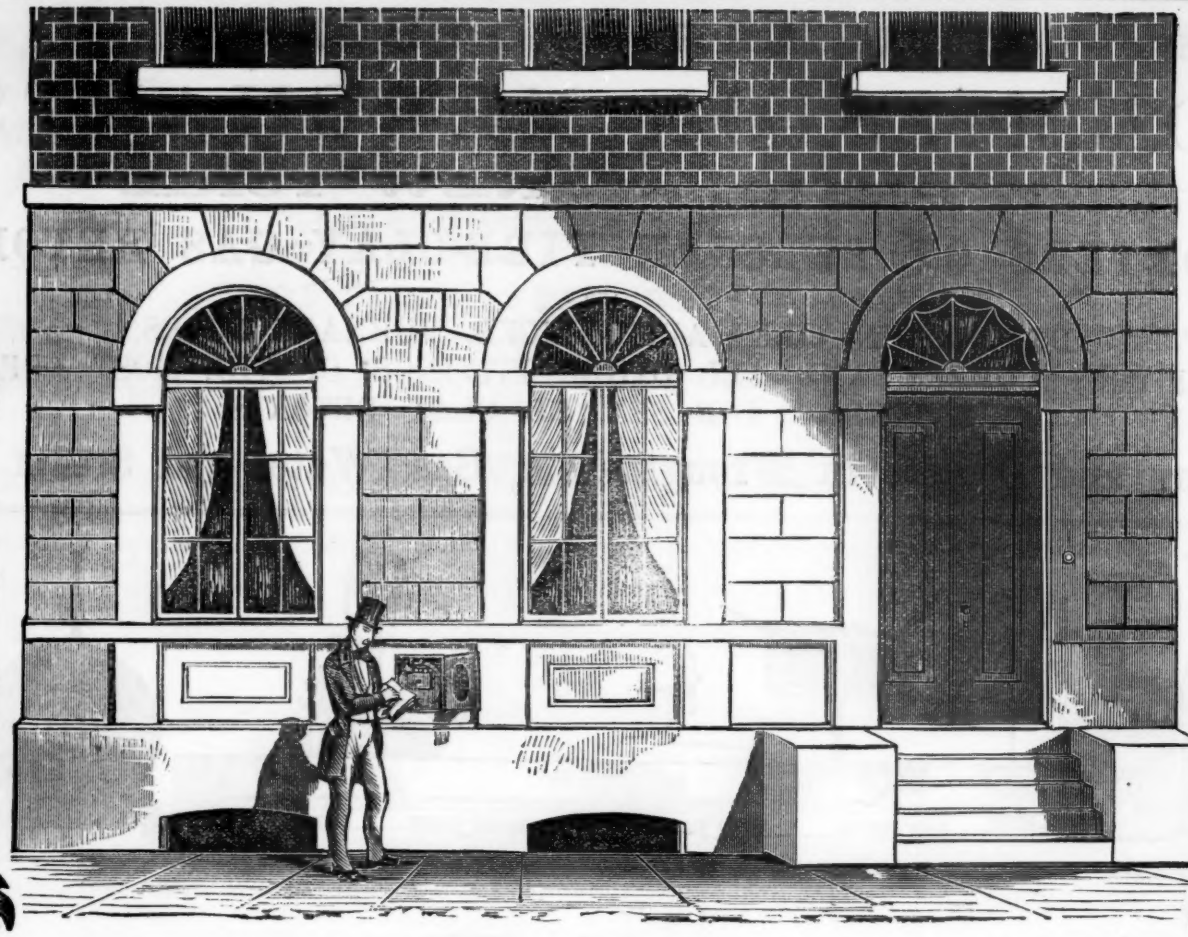
CENTRE SEALS,
&c. &c. &c.

An experience of more than Twenty-two Years, during which time we have manufactured a larger number of Gas Meters than any other establishment in the world, gives us confidence in calling the attention of parties desiring a superior Meter, either wet or dry. All our meters are tested, separately, by a sworn Meter Inspector, and we guarantee to give satisfaction in every particular.

We desire to call attention to our *Station Meter*, having made two very important improvements, by which we obtain an increased measuring capacity of more than twenty per cent., and do away with the stuffing box at the end of the drum shaft.

Our Patent Rotary Valve Dry Meter is used by more than *One hundred and seventy-five* Gas Companies in the United States, giving entire satisfaction. We therefore recommend it, believing it to be the best Dry Gas Meter manufactured.

CODE, HOPPER & GRATZ,
1500, 1502, 1504 FILBERT STREET,
PHILADELPHIA.



IMPROVED MODE OF SETTING GAS METERS IN THE WALLS OF BUILDINGS.

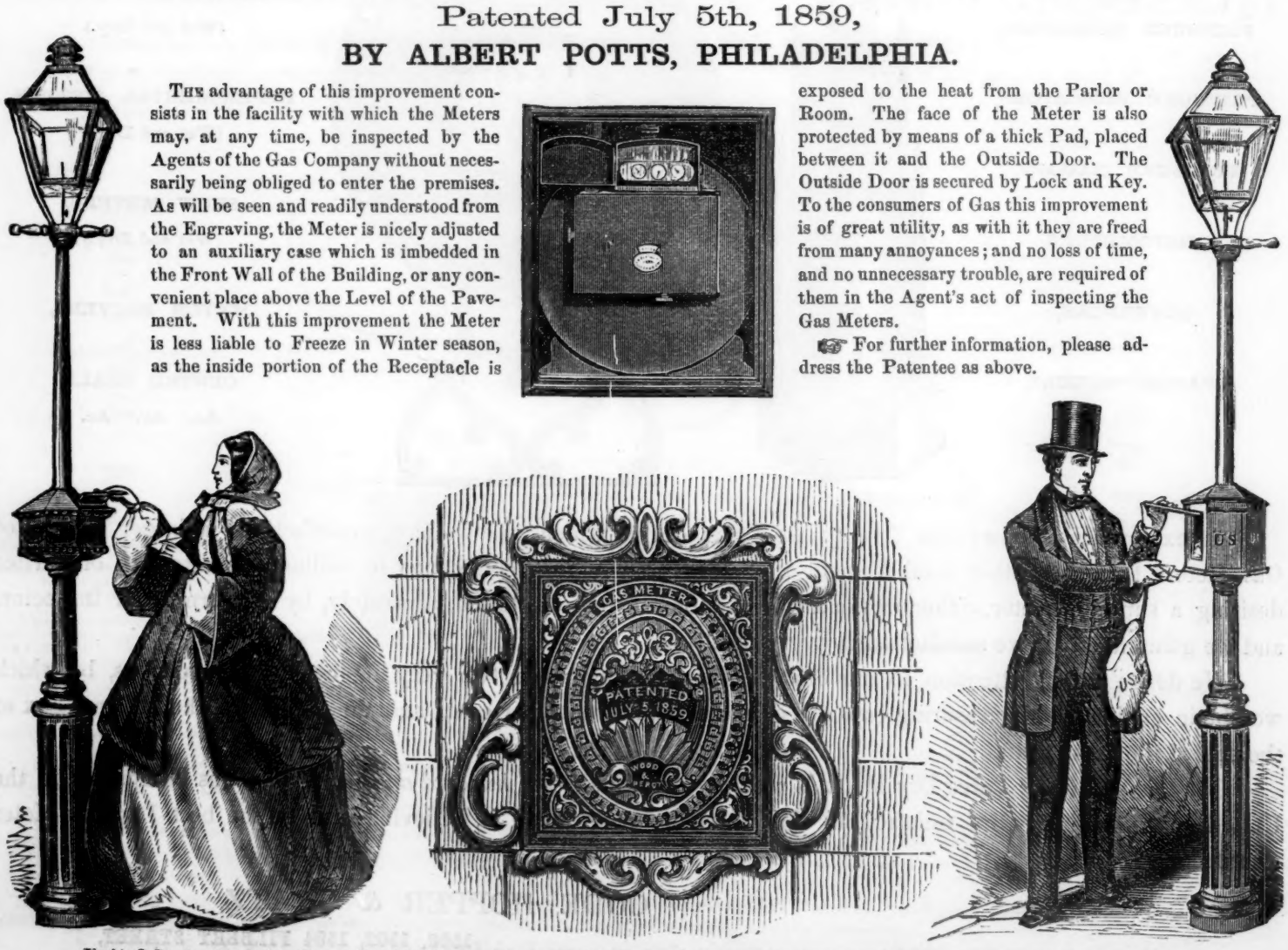
Patented July 5th, 1859,

BY ALBERT POTTS, PHILADELPHIA.

The advantage of this improvement consists in the facility with which the Meters may, at any time, be inspected by the Agents of the Gas Company without necessarily being obliged to enter the premises. As will be seen and readily understood from the Engraving, the Meter is nicely adjusted to an auxiliary case which is imbedded in the Front Wall of the Building, or any convenient place above the Level of the Pavement. With this improvement the Meter is less liable to Freeze in Winter season, as the inside portion of the Receptacle is

exposed to the heat from the Parlor or Room. The face of the Meter is also protected by means of a thick Pad, placed between it and the Outside Door. The Outside Door is secured by Lock and Key. To the consumers of Gas this improvement is of great utility, as with it they are freed from many annoyances; and no loss of time, and no unnecessary trouble, are required of them in the Agent's act of inspecting the Gas Meters.

☞ For further information, please address the Patentee as above.



United States Mail-Stations fixed to Lamp-Posts (Potts' Patent) to provide Increased Postal Facilities for large cities.

(See American Gas-Light Journal of October 1, 1859, page 60.)

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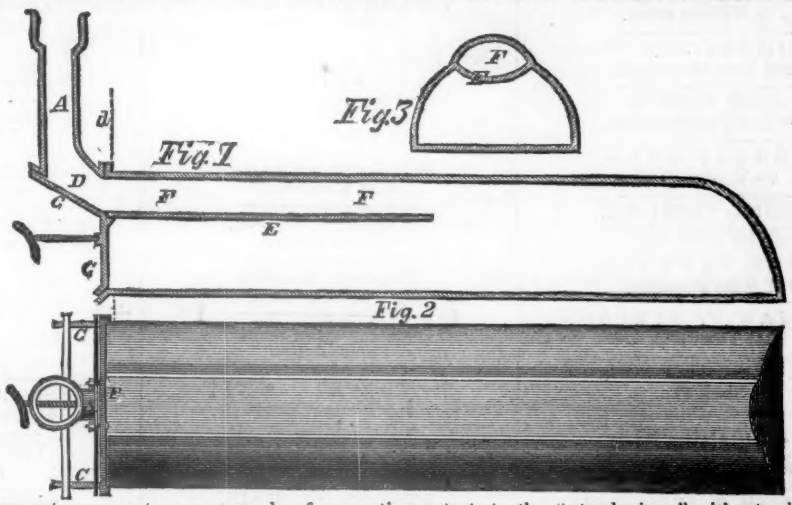

THE above cut represents a new mode of connecting retorts to the "stand pipes" without using "mouth pieces," thus saving the drilling the flanges and making the joints, as well as some 250 lbs. of casting, and several bolts for each retort set. A narrow piece of the door C. closes the lower end of the stand pipe. The plate E. is a separate piece, thinner than the retort, and may be secured to the door C., or slid over grooves made in the retort for that purpose. The retort is set in the ovens to the dotted line *d*. This mode of connecting may be applied to clay as well as iron retorts.
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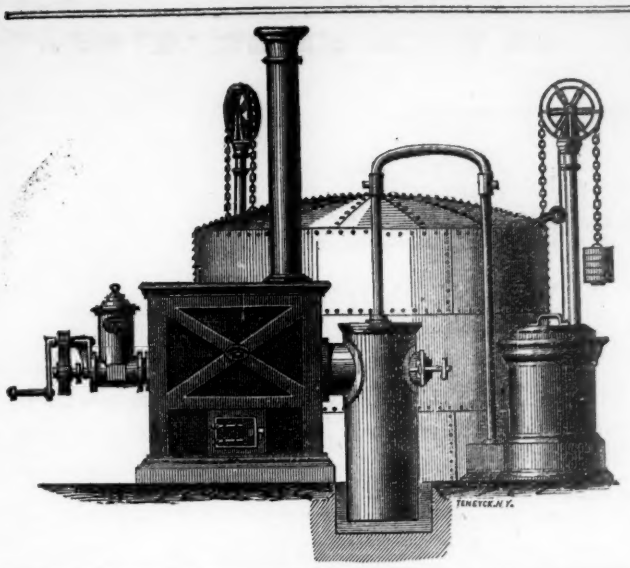

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2	11,000	13	1	16	"	18	16¼	21.25	15s. 6d.	3.72
3	10,000	11	2	0	Inferior.	25	15¼	20.00	14s.	3.36

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No.	GAS. Per ton, 2240 lbs. In Cubic Feet.	COKE. Per ton, 2240 lbs. Cwt.	Qrs.	Lbs.	Quality of Coke.	Ammonia Water in Gallons.	Tar in Gallons.	Illuminating power * per burner consuming 5 feet Gas per hour.	Price per ton free on board vessels in Liverpool.	Price at $4.80 per £ sterling.
1	11,000	13	1	16	Good.	16	11⅛	14.00	11s. 6d.	$2.76
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THOMAS GLOVER thinks it necessary to put Gas Companies on their guard against parties selling Patent Dry Gas-Meters constructed in imitation of his, but unskilfully made on erroneous principles, and with improper and unsuitable materials.

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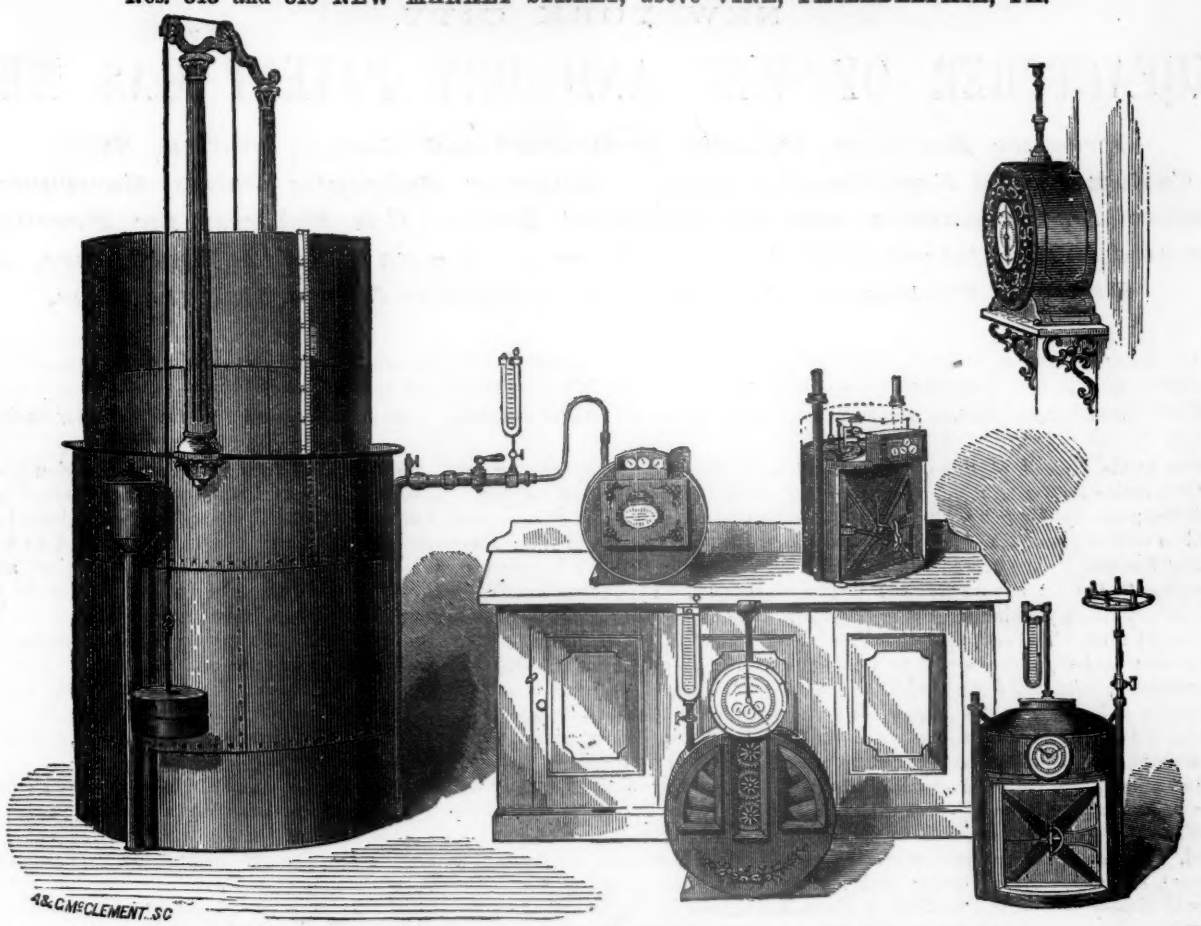

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An experience of over *fourteen years* gives us confidence in calling attention to the superior instruments, both Dry and Wet, we are now manufacturing.

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Wishes to call the attention of Gas Engineers to these Retorts as a very superior article.
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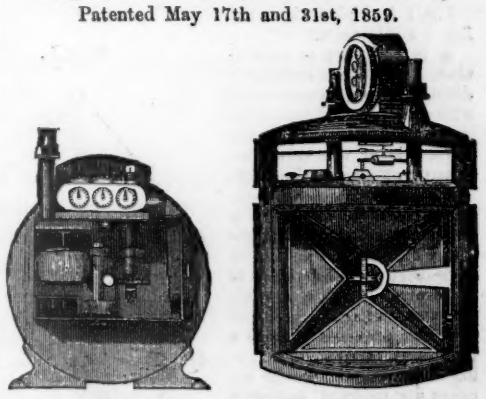
HARRIS & BROTHER'S
Improved Dry Gas-Meter,
Patented May 17th and 31st, 1859.



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GAS ENGINEER AND CONTRACTOR.
COAL AND ROSIN WORKS
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Refer to CHARLES ROOME, Esq., Prest. Man. Gas-Light Co., N. Y.
H. PUMPELLY, " " Albany, " "
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SAMUEL DOWN,

Nos. 340, 342, 344 & 346 West Twenty-second Street, North River,

NEW YORK CITY,

MANUFACTURER OF WET AND DRY PATENT GAS METERS,

Pressure Registers, Pressure Indicators and Gauges, Station, Show, Customer, and Experimental Meters, Centre or Hydraulic Valves, Governors, Compensators for Exhausters, and the Standard Testing Gas Holders* for Proving Meters, now used in the State of New York in compliance with an Act of the Legislature. Also, Bunsen's Photometer, with complete Apparatus for working the same.

S. Down being a practical mechanic, and having given his entire attention for the past eighteen years to the manufacture and improvement of Gas Meters, claims, without fear of contradiction, a superiority for the Gas Meters manufactured by him over all others in this country and Europe.

All Meters manufactured by him are tested and sealed by the Gas Meter Inspector of the State appointed by the Governor under the act of the last Legislature.

S. Down avails himself of this occasion to place all Gas-light Companies on their guard against parties who are industriously endeavoring to introduce to their notice Patent Dry Meters, as they are attempted imitations of his own They are likely to deceive only those unfamiliar with the construction of Meters; but by others who have given attention to the subject, it will be readily observed that the meters referred to have been constructed without regard to correct principles. He would invite comparison between the lately Patented Eccentric Slide Valve attached to his Dry Meter, and the ordinary Rotary Valve introduced by other parties. The Rotary Valve was first adopted in England *twenty years since*, and finally abandoned to give place to the Eccentric Rotary Valve of Hyams'. This, though considered at the time an improvement on the old valves, has not proved as satisfactory in its working as was anticipated. The Eccentric Slide Valve introduced by Mr. Down accomplishes all that has, for so long a time, been sought after. The action of this Valve is so perfect that the Meter to which it is attached will not vary in its registration more than one-half of one per cent. under pressure equal to a column of water varying from *two-tenths* of an inch to *two inches and five-tenths*. The seat of the valve will always remain free from any deposit while the Meter is at work, as its peculiar motion thoroughly cleanses both valve and seat; at the same time it removes all liability of leakage, as it is impossible for either valve or seat to wear unevenly.

Hitherto, objections have been made against the use of Dry Meters, occasioned by the accumulation of condensable matter from the gas in the measnring chambers, thus affecting the registration of the Meter and injuring the leather of the diaphragms.

Mr. Down has lately patented an improvement in this respect which effectually remedies this serious evil. It is accomplished by the addition of a drip-pipe, or hollow tube, attached to both inlet and outlet pipes of the Meter, and so arranged that all condensation is arrested outside the measuring chambers. When the accumulation reaches a certain point, the flow of gas is stopped, and the condensable matter must be removed before the lights can be restored. With the addition of these improvements, Mr. Down does not hesitate to offer his Meter as the most perfect instrument yet devised for the measurement of gases. As a further and practically conclusive proof of the superiority of Mr. Down's Patent Eccentric Slide Valve Dry Meter, he would simply state that a number of them have been in constant use for a period of over five years, during which time they have never been once removed for repairs, and are to this day in perfect order. The Gas Companies of New York, which have these Meters in use, are referred to in substantiation of this statement..

The Photometer and accompanying apparatus manufactured by S. Down, is the same as that now used in England by the most eminent gas engineers and chemists, and is conceded to be the most accurate instrument yet introduced for determining the illuminating power of a gas. The apparatus comprises a Graduated Bar furnished with a Bunsen paper screen, a Candle Staff, and Lamp Pillar, Experiment Meter, Regulator, two Pressure Gauges, a Minute Clock, and a Balance for weighing the candle. To parties making application, Mr. Down will forward printed directions for arranging a Photometer Room and rules for working the apparatus; and, if desired, will furnish competent persons to superintend the arrangement of the room. Standard Sperm Candles and Paper Screens forwarded to any part of the country on application.

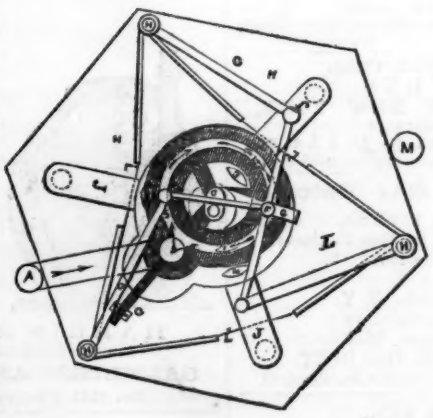
PATENT ECCENTRIC SLIDE VALVE DRY METER AND DRIP-PIPE.

SAMUEL DOWN, PATENTEE AND SOLE MANUFACTURER.

Fig. 1 is a plan view, and Fig. 2 a side view.

A is the inlet or supply-pipe. B is the concentric sliding valve, constructed with a centre vent and circular gas canal, formed in the under-side of the valve, between two concentric rings, by a continuous groove, making a complete circle. B is also constructed with a piston, which has a fixed point at bracket C. This piston is the centre of equipoise, equipollence, and semi-equal motion, and prevents B from a possibility of rotating or being displaced, and better secures its uniform eccentric slide motion. The gas from A is received directly into the gas canal in B, at this central point of equilibrium, and does not communicate with the centre B until having done full duty, and in the act of being exhaled for consumption.

Fig. 1.



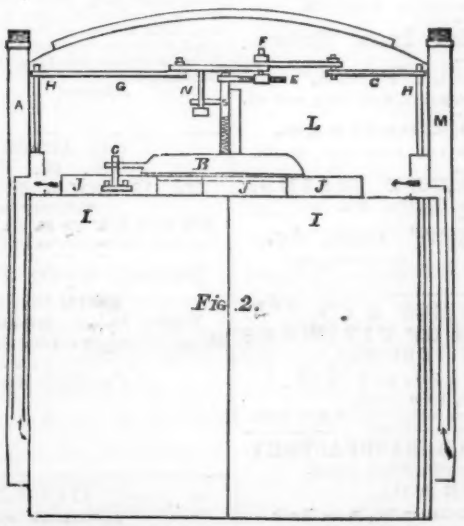


Fig. 2.

Immediately on the outer and inner sides of circular gas canal is a set or two rows of gas ports, consisting of three of each marked 1, 3, and 5, interior, and three marked 2, 4, and 6, exterior, and antagonistic to the interior ports. Each pair of antagonistic ports are on the same respective sides, and each in a line with its fellow, pointing to or radiating from the centre of B, which permitsthe direct and reverse conducting gaspipes, 1, (leading to and from the exterior gas chambers,) to be made straight.

The short crank, D, vertical shaft, S, with the long crank, E, and vertical crank-pin, F, double-jointed levers, G, vertical shafts, H, and diaphragms, I, with their relative connections and operations, are all well known, and need not be explained or described, except that the vertical shaft, S, has a pivot point or centre of support at its lower end, which is important, owing to the extreme subtlety of the gas and consequent delicate pressure upon the parts. It is essential that all the moving parts should be nicely adjusted and fixed upon, or at, permanent centres, else they are liable to twist, or cant, and arrest action altogether or produce irregularity.

M is the outlet pipe to the consumers, leading from the upper interior gas chamber, L, while K'' is the exterior gas chamber.

Fig. 2 also shows a sectional view of the arrangement for collecting the condensation in the outlet as well as the inlet pipes. It will be readily understood, and has been heretofore referred to as the Patent Drip-Pipe.

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* The standard of measurement of this Gas Holder is given by Professors Torrey, of the U. S. Assay Office; Joy, of Columbia College; Gibbs, of the Free Academy, with several other distinguished scientific gentlemen.